OTTERPOOL PARK

Environmental Statement Appendix 4.7: Off-site Infrastructure Assessment

MARCH 2022

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1 Introduction

1.1 Background

1.1.1 Arcadis has prepared this environmental assessment of Off-site Infrastructure on behalf of Otterpool Park LLP ('the Applicant') to accompany an outline planning application for Otterpool Park Garden Settlement (the proposed Development). This report forms Appendix 4.3 of the Otterpool Park Environmental Statement (ES).

1.1.2 The proposed Development is located to the south-west of Junction 11 of the M20 motorway and south of the Channel Tunnel Rail Link, also referred to as High Speed 1 (HS1) (as shown in Appendix A). The proposed Development is described as:

'Outline planning application seeking permission for the redevelopment of the site through the demolition or conversion of identified existing buildings and erection of a residential-led mixed-use development comprising up to 8,500 residential homes including market and affordable homes; age restricted homes, assisted living homes, extra care facilities, care homes, sheltered housing and care villages; a range of community uses including primary and secondary schools, health centres and nursery facilities; retail and related uses; leisure facilities; business and commercial uses; open space and public realm; burial ground, sustainable urban drainage systems; utility and energy facilities and infrastructure; waste and waste water infrastructure and management facilities; vehicular bridge links; undercroft, surface and multi-storey car parking; creation of new vehicular and pedestrian accesses into the site, and creation of a new vehicular, pedestrian and cycle network within the site; improvements to the existing highway and local road network; lighting; engineering works, infrastructure and associated facilities; together with interim works or temporary structures required by the development and other associated works including temporary meanwhile uses. Layout, scale, appearance, landscaping and means of access are reserved for approval.'

1.1.3 An Environmental Impact Assessment (EIA) of the proposed Development has been undertaken and an ES has been prepared and submitted as part of the amended outline planning application. The ES provides an assessment of the likely environmental effects associated with the proposed Development, including all infrastructure within the application boundary. This report provides an assessment of the off-site infrastructure works required, comprising upgrades to highways, upgrades to public rights of way and provision of utilities infrastructure.

1.2 Purpose of this document

1.2.1 The purpose of this report is to provide an assessment of the environmental effects associated with off-site infrastructure works required to serve the development. Given that these off-site infrastructure works are likely required to construct and operate the proposed Development, the potential for significant environmental effects of the works has been considered, in line with the EIA Regulations, insofar as is practical.

1.2.2 This Appendix therefore set out the high level desk based environmental assessment of these off-site infrastructure works, identifies likely potential significant effects and mitigation where possible.

1.3 Limitations and Assumptions

1.3.1 The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 ('the EIA Regulations') states that the ES should provide 'an indication of any difficulties encountered by the applicant in compiling the required information'. The main technical difficulties in relation to predicting likely significant environmental effects of the off-site infrastructure works are the following:

- The Applicant has no absolute control over the nature and location of the final works, given that the majority of the works will be, for example, undertaken within the limits allowed by statutory undertakers e.g. highways upgrade works that are carried out under Section 278 of the Highways Act 19 will be undertaken by the Highways Authorities and not the Applicant or utilities upgrades undertaken under the relevant legislation by the statutory undertaker;
- Uncertainties over the requirement for the highways works given that they depend on a 'monitor and manage' approach, which is driven by development 'threshold triggers'; and
- In some cases there is a high level of uncertainty associated with the reasonable worst-case assumptions regarding the nature and scale of the works.

1.3.2 Given the above, an assessment has been undertaken of the potential environmental effects of the off-site infrastructure works based upon its best understanding of the likely nature and location of the works where possible. This has included consideration of the infrastructure trigger thresholds and using worst-case assumptions of the works corridor widths to ensure that a 'Rochdale envelope' approach has been applied to the assessment of potential significant effects. Assumptions and technical difficulties have been highlighted within this process.

1.3.3 It should be noted that, when the consent applications (if required) for the off-site infrastructure works are brought forward, they will be undertaken by third parties e.g. the Highways Authority or the relevant statutory undertaker, which would be responsible for carrying out a separate environmental assessment of the detailed off-site infrastructure works proposals when submitted for approval (if required) from the determining authority, or in accordance with the statutory undertaker's governance processes.

1.3.4 Assumptions and limitations specific to each of the off-site infrastructure works are set out in Section 3. It is assumed that the information presented within Section 3, derived from various sources and consultation, is accurate.

2 Methodology

2.1 Overview

2.1.1 The high level assessment of the off-site infrastructure works has followed a stepped process comprising:

- Step 1: Identify, and review of the off-site infrastructure works which may be required, including consideration of the following to conclude which off-site infrastructure works it would be reasonable and proportionate to further assess:
  - The likely scale and duration of the works required;
  - The availability of appropriate information regarding the works required; and
  - If insufficient design detail is available, likely assumptions regarding the works that could be reasonably used to assess a worst case scenario have been applied to the assessment, bearing in mind the above factors.
- Step 2: Review of publicly available baseline environmental information for the off-site infrastructure works taken forward from Step 1, and a high-level assessment of whether the off-site infrastructure works are likely to result in significant effects (either alone or cumulatively) with the adoption of standard mitigation measures.
- Step 3: For those works that may be likely to have a significant effect at Step 2, an assessment commensurate with the level of detail in the ES (where possible).

2.2 Step 1 – Identification and Review of off-site infrastructure works

2.2.1 An overview of the off-site infrastructure works required is provided in Chapter 4: The Site and the Proposed Development. The off-site infrastructure works associated with the proposed Development are discussed in the following documents:

- Transport Assessment (ES Appendix 16.4); and
- Utility Strategy (ES Appendix 4.8).

2.2.2 These documents have also informed the making of reasonable assumptions to be used in the assessment.

2.2.3 For certain works an indicative route for the works has been identified, based on the requirement to connect two points. This applies solely to new utilities corridors. For these works, a 100m corridor has been applied either side to indicate the uncertainty in the location.

Requirement for further assessment

2.2.4 The off-site infrastructure work packages have been taken forward to Step 2 where:

- There is considered to be sufficient information to provide a reasonable and proportionate assessment; and
- The scale and location of the works are large enough such that there is a potential for a significant environmental effect taking into consideration the sensitivity of the receiving environment, either alone or cumulatively with the proposed Development and each other.

2.2.5 Schedule 4 of the EIA Regulations state the following with regard to technical difficulties of the assessment.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

2.2.6 Due to the outline nature of the planning application there is a high degree of uncertainty as to the requirement for certain elements of the off-site infrastructure works, and if required the nature and scale of the works likely to be necessary. In these cases it has been explicitly identified (in Section 3.1) that there is insufficient information to assess the off-site infrastructure works at this stage, and therefore these works are not taken forward to Step 2.

2.2.7 The potential scale and location of the proposed works have also been reviewed against Schedule 1 and Schedule 2 of the EIA Regulations. Schedule 1 and 2 of the EIA Regulations define which types of development, and the thresholds at which those types of development, would require EIA as a standalone development. These schedules will be used to consider whether the scale of the works would themselves be likely to give rise to significant effects, on the basis that development not requiring EIA is unlikely to give rise to significant effects. As the off-site infrastructure works are not stand alone, this judgement will be made cognisant of the fact that cumulative effects may occur between the off-site infrastructure works and the proposed Development.

2.2.8 It is noted that under the EIA Regulations the majority of the potential off-site infrastructure works would fall within category 13(b) of Schedule 2 'Changes and extensions' either on the basis of their existing use as highways/utilities infrastructure, or as extensions to the proposed Development itself. However, it is considered that Schedule 2 of the EIA Regulations give a good indication of the likelihood of significant effects were the works to be considered as a standalone.

2.2.9 With this in mind, further reasoned consideration on the basis of professional judgement has been given to each of the off-site infrastructure works to conclude whether the works have the potential to result in significant effects.

2.3 Step 2 – Review of environmental baseline information

2.3.1 The works taken forward have been reviewed against publicly available baseline information. The information sources considered comprised:

- Provisional Agricultural Land Classification dataset;
- Publicly available mapping and satellite mapping;
- Natural England's designation information;
- Local wildlife sites dataset from Kent and Medway Biological Records Centre;
- Historic England's designated asset information;
- Kent County Council Historic Environment Record (HER) data (Ref. 1);
- F&HDC Explore Folkestone & Hythe District interactive map (Ref. 2);
- Geology of Britain Viewer (Ref. 3);
- Natural England MAGiC map (Ref. 4);
- KCC public right of way (PRoW) map (Ref. 5);
- Environment Agency main river map (Ref. 6);
- Environment Agency Flood Map for Planning (Ref. 7);
- The definition of Best and Most Versatile agricultural land in Annex 2 of the National Planning Policy Framework (Ref. 8); and
- Cumulative development map in ES Appendix 2.5.

2.3.2 A study area of 250m either side of the indicative routes has been applied to review the constraints and consider likely receptors. The 250m study area has been selected based on professional judgement based on the likely scale of the works and zone of influence of impacts. Where a 100m corridor has been applied in Step 1 the 250m is inclusive of the 100m corridor.

2.3.3 Qualitative consideration of the potential impacts of the works alone, cumulatively with the proposed Development and cumulatively with other development (identified in ES Appendix 2.5) has been undertaken based on this understanding of the constraints, and therefore the likely receptors. The results are set out for each topic assessed in the ES.

2.4 Step 3 – Further environmental assessment

2.4.1 Any off-site infrastructure works which identified potential likely significant environmental effects after Step 2 would have been assessed using the methodologies set out in the Technical Chapters 5-17 of the ES, where possible. Only those topics for which likely significant effects would have been identified at Step 2 would have been 'scoped in' to the assessment. However, as no off-site infrastructure works have been taken forward from Step 2 this step was not required.

3 Environmental Assessment of the Works

3.1 Step 1

3.1.1 Table 1 sets out the off-site infrastructure works which may be required, and all available information on these works. Figure 1 in Appendix A shows the approximate location of the works required (note these locations are indicative and do not comprise a site boundary). The table provides the conclusion of whether the works should be taken forward to Step 2. The reasons set out in the last column of Table 1 relate to the following:

- A: Insufficient design information on scale and duration of works such that worst-case assumptions cannot be derived/used;
- B: The works are of insufficient scale to require assessment (EIA Regulations, Schedule 2, part 10f, the area of roads exceeds 1ha is the threshold criteria for EIA for new roads). In addition, the baseline environment of the works is an existing highway therefore transport related impacts are already experienced. Any impacts experienced would likely be of a temporary nature during construction and could be managed through a Code of Construction Practice.
- C: The works are considered to be of insufficient scale to require assessment (Schedule 2 of the EIA regulations do not contain a threshold for the development of PRoW).
- D: The works are considered to be of insufficient scale to require assessment (Schedule 2 of the EIA regulations do not contain a threshold for the development of water or sewage pipes). In addition, the works will comprise laying of utilities in roadways which contain existing utilities. Any impacts experienced would likely be of a temporary nature during construction, and could be managed through a code of construction practice.

3.1.2 From Table 2, the works considered to meet the criteria set out in the methodology to take forward to Step 2 are:

- Ref. 19: Sewage discharge off-site to Sellindge Waste Water Treatment Works (WWTW);
- Ref. 20: Connection with Sellindge Grid Substation;
- Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW; and
- Ref. 22: Water main reinforcement to Paddlesworth Reservoir.

3.1.3 Ref. 19 to 22 have been identified for further consideration due to scale of the works which may be required, and in the case of Ref. 19 to 21 the current rural land use.

3.1.4 There is considered to be a low potential for cumulative interactions between the off-site infrastructure works listed in Table 1 (not taken forward to Step 2) with each other and with the proposed Development. This is due to the location of the works, generally at some distance from the proposed Development, and the small scale of the works.

3.1.5 The exception to this is with respect to transport and transport related disciplines, namely air quality, noise and climate. The below paragraphs explain how the off-site infrastructure works has been considered for these topics.

3.1.6 The assessment of off-site highways infrastructure in the transport model, used as the basis of the Transport Assessment (ES Appendix 16.4) has been undertaken as follows:

- Modelling of the wider network using the strategic VISUM model;
- Analysis of the turning movements at key junctions;
- Modelling of the junctions (both local and strategic) outside of the VISUM model to determine whether the junction is performing over, at or under capacity in the future scenarios based on the turning movements generated; and
- Determination of the requirement for highways works at off-site locations based on the assessed capacity.

3.1.7 The off-site infrastructure works have not been included in the VISUM model and are therefore not represented in the data analysed by air quality, noise and climate.

3.1.8 This approach is considered to be robust, and allows a worst-case assessment, on the following basis:

- Transport: The capacity of the junctions on the highway network that have been identified as reaching capacity or over capacity with the implementation of the Otterpool Park development have been assessed, and the appropriate mitigation has been proposed. The measures proposed will mitigate these junctions such that they will operate at the same capacity in the situation where Otterpool Park is not implemented.
- Air Quality, Noise and Climate: The modelled AADT/AAWT provided are representative of the worst-case operational transport requirements of the proposed Development and cumulative scenarios, the highways works would not change the AADT/AAWT assessed and therefore the assessment of these junctions are incorporated within the main body of the ES. As Newingreen Junction and A20 dualling mitigation plus new on-site junctions have been included in the forecast model year 2044, this would provide an appropriate distribution/assignment for strategic trips, which is suitable to consider the impact at off-site junctions without the need to remodel with mitigations at other junctions in VISUM.

3.1.9 Therefore, cumulative operational effects associated with transport, air quality and noise of the highways works are excluded from this report as they are considered within the main body of the ES.

Table 1 Description of works, and outcomes of Step 2

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
1	M20 J10	6.8km NW	The modelling reports that the Kennington Road approach to the junction is predicted to go over-capacity in the 2044 10,000 Homes Do-something scenario, while the signalised T-junction to the west of the main junction which provides access to the M20 EB on-slip is predicted to go over-capacity in the 2037 Do-Something scenario, and in all 2044 scenarios. However, given that M20 Junction 10a has been recently opened, there is significant uncertainty about what the future performance and capacity of this junction and M20 Junction 10 would be like. While there is the potential to mitigate this junction to bring the junction within capacity, how this would impact M20 Junction 10 operation and whether it would relieve the potential capacity issues here requires discussion with National Highways regarding an appropriate way forward. No proposals have currently been identified.	Assume any works required would be within the current highway boundary	No [A, B]
2	M20 J11	0.25km N	M20 Junction 11 forms the primary access to the M20 and the wider strategic road network from Otterpool Park. The modelling indicates that in all Do-Something scenarios this junction is likely to go over capacity. The proposed mitigation requires the partial signalisation of the roundabout – specifically signalisation of the M20 Eastbound and Westbound offslips, as well as the Northbound entry from the A20, as well as for their corresponding circulatory carriageway sections.	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
2	M20 J11 Eastbound Diverge	0.25km N	New lanes, widening of lanes, or redistribution of lanes within the highways boundary	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
2	M20 J11 Eastbound Merge	0.25km N	New lanes, widening of lanes, or redistribution of lanes within the highways boundary	Assumes works required will be no larger in scale or	No [B]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
				duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	
2	M20 J11 Westbound Diverge	0.25km N	New lanes, widening of lanes, or redistribution of lanes within the highways boundary	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
2	M20 J11 Westbound Merge	0.25km N	New lanes, widening of lanes, or redistribution of lanes within the highways boundary	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
3	Aldington Road/Lympne Hill	0.6km SE	The junction capacity modelling indicates that in the 2044 Do-Something scenarios, in the PM peak, the right-turn movement from Aldington Road into Lympne Hill is potentially over-capacity. However, given the junction configuration and the dominant right-turn movement it is considered likely that any impact at this location would not be severe. Arcadis also understands that there are ongoing investigations regarding the possibility of closing Adlington Road to the east of this junction. Therefore, including this location in the monitor and manage approach to determine in the future whether mitigation is necessary and appropriate is recommended. No proposals have currently been identified.	Assume any works required would be within the current highway boundary	No [A, B]
4	A261 London Road/Barrack Hill	2.8km SE	To the south of this junction, there is a signalised junction (Scalons Bridge Road/A259 Military Road) which should aid capacity from Barrack Hill as vehicles should create platoons creating additional gaps for vehicles exiting Barrack Hill.	Assume any works required would be within the current highway boundary	No [A,B]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
			Therefore, it is proposed that the operation of this junction is monitored to establish mitigation if required in the future. No proposals have been identified.		
5	A259 / Dymchurch Road / Military Road double yellow line scheme	3.3km S	Increasing local parking restrictions in the vicinity of the pedestrian crossing on Military Road outside the nearby Sainsburys would improve the operation of this signalised crossing for vehicles.	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment Assumes that if works are required they would be within the highways boundary.	No [B]
6	A20 Ashford Road / A20 Junction 11 Left In Left Out	0.1km NE	The proposed mitigation of the M20 Junction 11 located to the north of the junction would involve the approach to this junction being signalised, which may platoon vehicles from the north allowing additional gaps in traffic for vehicles to exit from Ashford Road. Therefore, it is proposed that the operation of this junction is monitored to establish if mitigation if required in the future. No proposals have been identified.	Assume any works required would be within the current highway boundary	No [A, B]
7	M20 Junction 12 Eastbound Merge and Junction 13 Eastbound Diverge	5.7km E	New lanes, widening of lanes, or redistribution of lanes within the highways boundary	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
8	M20 Junction 13 South Roundabout	7.6km E	The junction modelling results at this junction were discussed with Kent County Council, Folkestone & Hythe District Council and National Highways. It was agreed that the results suggested that the Otterpool Park development would not have a severe impact at this junction and that, subject to further review by all three authorities, no mitigation would be proposed for this junction. During a period when mitigation options were discussed, a potential improvement at the junction was identified. The Churchill Avenue approach consists of a single long lane that widens to two lanes approximately 75m and then to three lanes approximately 20m before the give way line. The Churchill Avenue exit is two lanes that taper down to one wide 4.5m lane. If the exit lane were to taper down to a standard lane width it would allow for the two-lane section on the Churchill	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
			Approach to be extended further back. This could be brought forward if required, and as such the location should be included in the monitor and manage strategy.		
10	M20 Junction 9 – Improvements to Trinity Road and Fougeres Way	10.7km NE	M20 Junction 9 is shown to be over capacity in all future scenarios, including the Do-Minimum scenarios. To mitigate the potential impacts, it is proposed that the exiting flare on Trinity Road is extended by 30m. This would increase the capacity of the approach and provide additional stacking space. It is also proposed that amendments to the lane allocations on the approach are made to allow the middle lane on Trinity Road to be shared for ahead and left movements. This would distribute the capacity enhancements more evenly across all movements on the approach. Additionally, an additional lane on the southbound exit would assist in catering for the additional traffic.	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment Assumes that if works are required they would be within the highways boundary.	No [B]
11	A259 Prospect Road / Stade Street	3.5km SE	This giveway junction is shown to be overcapacity on the Stade Street giveway in all future scenarios, starting in the 2037 Do-Minimum scenario. It is considered likely, however, given that the junction modelling software takes no account of the proximity of the pedestrian crossing to the east of this junction, that the capacity issue at this location is overstated. The signalised pedestrian crossing point will cause gaps in the traffic along A259 Prospect Road in both directions, allowing vehicles opportunities to exit from Stade Street. Given this, it is recommended that the situation at this junction is monitored and managed in order to understand what the true future impact of Otterpool Park at this location would be. There are no proposals identified.	Assume any works required would be within the current highway boundary	No [A, B]
12	A20 signals on the approach to Sellindge/Barrow Hill Shuttle Signals	0.05km N	The Barrow Hill Shuttle Signals form a key constraint on the A20 to the west of Otterpool Park, with the shuttle signals going overcapacity in all future scenarios including the 2037 Do-Minimum. Given the physical constraints present, there is not a practical way to significantly increase capacity through this location. Extensive discussions have been undertaken with the Highway Authority, and while it is possible to improve capacity through this location by increasing the cycle times of the signals, this would have the undesirable impact of increasing queue lengths on the A20. Given the desire to encourage traffic to, where possible, access Otterpool Park via M20 Junction 11, any	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment Assumes that if works are required they would be within the highways boundary.	No [B]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
			increase in capacity through this location may have the impact of encouraging drivers to take this undesirable route. Cognisant of the above, at this time no changes to the operation of this junction are proposed, however a monitor and manage approach is proposed in order to keep the situation at this location under review.		
13	M20 J10A	5.9km NW	M20 Junction 10A is a new junction directly to the east of M20 Junction 10 which is a full access junction from the M20 providing additional capacity at this location. Junctions 10 and 10a operate together with it being likely that traffic delay would balance across the two junctions. Junction 10a appears to be overcapacity in all future scenarios, in the PM peak period. Providing a third lane northbound on the circulatory carriageway appears to ameliorate the capacity issues, and there is currently hatched out space on the bridge which would allow for a third lane on the northbound carriageway.	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment. Assumes that all works would be within the highways boundary.	No [B]
14, 15, 16	A20 / Spitfire Way / Alkham Valley Road interchange	8.6km NE	These three junctions, taken together, form the A260 interchange with the A20. All three junctions as presently configured, are predicted to be overcapacity in all future scenarios, beginning with the 2037 Do-Minimum. Arcadis understand that discussions have taken place between F&HDC and National Highways regarding the future layout of this junction given the Local Plan ambitions. Discussions are ongoing regarding the level of mitigation required as well as an appropriate funding mechanism. It is considered that the likely level of impact from Otterpool Park is minimal given the trip reduction benefits derived from locating all of the required housing growth in one location, therefore an ongoing understanding of the performance of these junctions under the umbrella of the monitor and manage approach is considered most appropriate. There are no proposals identified at this time.	Assumes that all works would be within the highways boundary.	No [A, B]
17	A20 Hythe Road / The Street (located to the north of M20 J10)	6.5km NE	The roundabout junction between A20 Hythe Road and The Street appears to go over capacity in the 2044 Do-Something scenarios. However, given the junction is a reasonable distance from Otterpool Park, and localised widening of the roundabout entry appears feasible, if necessary, a monitor and manage	Assumes that if works are required they would be within the highways boundary.	No [A, B]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
			approach to determine whether mitigation is required in the future is appropriate. There are no proposals identified at this time.		
18	Highway Works to Barrow Hill	0.01km N	Resurfacing works and laying of anti-skid material between the application site boundary and the traffic lights under the bridge at Sellindge.	Assumes works required will be no larger in scale or duration than those identified in the Transport Assessment Assumes that if works are required they would be within the highways boundary.	No [B]
19	Sewage discharge off-site to Sellindge Waste Water Treatment Works	1km NW	Connection of on-site sewer to Sellindge WWTW approximately 1km north-west of the site.	Assumes that the sewer would be within the route corridor identified on Figure 1 in Appendix A. Assume that the sewer would be buried below ground. Assumes that the working width would be >10m, to give a working area of >1ha. Assumes that an operational wayleave of a maximum of 12m is required for access. Assumes that operational access requirements will be limited to ad-hoc repair and maintenance.	Yes
20	Connection with Sellindge Grid Substation	1km NW	Minor off-site reinforcement works will be undertaken by UKPN at Sellindge Grid substation with upgrades to the existing circuitry. Connection required from the Sellindge Grid substation to the site. There is currently no existing cable route, and no information available on likely routing.	Assumes that the connection will be up to 1km in length, and will be within the route corridor identified on Figure 1 in Appendix A. Assumes that connection is below ground. Assumes that an operational wayleave of a maximum of 12m is required for access.	Yes

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
				Assumes that operational access requirements will be limited to ad-hoc repair and maintenance.	
21	Sewage outfall to the East Stour River from the onsite WWTW	1km W	Potential extension to an outfall lower downstream of the East Stour River from the originally assumed outflow connection adjacent to the WWTW on-site.	Assume that the outflow would be within the route corridor identified on Figure 1 in Appendix A. Assume that the outflow would be buried below ground. Assumes that the working width would be >30m, to give a working area of >1ha. Assumes that an operational wayleave of a maximum of 12m is required for access. Assumes that operational access requirements will be limited to ad-hoc repair and maintenance.	Yes
22	Water main reinforcement from Paddlesworth Reservoir	0 to 10km E	Construction of an approximately 10km long, 560mm diameter, new dedicated distribution main from Paddlesworth Reservoir to the site. Discussion with Affinity water company has indicated the route would be likely to follow the route of the existing water main, details provided in the Utility Strategy. There are two potential routes for the water main between Sandling Road and Beachborough road, the secondary route is referred to as an 'Alternate Route (Ref. 22b on Figure 1 in Appendix A)'. There are also two potential routes for the water main to the east of Peene (Ref. 22c on Figure 1 in Appendix A).	Assume that the water main would be laid along the approximate route of the existing water main. The existing water main largely follows the route of road corridors, as shown on Figure 1 in Appendix A. Assume that the water main would be below ground. Assumes a precautionary working width of >1m, to give a working area of >1 hectare. Assumes that an operational wayleave of a maximum of 12m is required for access outside of public highways.	Yes

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
				Assumes that operational access requirements will be limited to ad-hoc repair and maintenance.	
23	Harringe Lane	0km W	Proposal to close this road for vehicle traffic halfway down the road. This will prevent any through traffic generated by the development and create a more attractive route for walking and cycling in the north – south direction	Assumes only very minor physical works are required (e.g. bollards)	No [C]
24	Aldington Road between Otterpool Avenue and Stone Street	0km S	Improvements to the pedestrian provision such as formalised crossing points and consideration for traffic calming measures close to key pedestrian desire lines.	Assumes only very minor physical works are required	No [C]
25	HE/281 footpath	0km E	Improvements to the route between Stone Street and heading south east through Sandling Park towards Hythe and Saltwood.	Assumes only very minor physical works are required	No [C]
26	HE/293 footpath	0km E	Links to the proposed pedestrian network and connects eastwards to Hythe	Assumes only very minor physical works are required	No [C]
27	HE/343 byway	1.9km E	Improvements to this link.	Assumes only very minor physical works are required	No [C]
28, 29	HE/359 and HE/371 footpath	0.15km N	HE/359 and HE371 footpath - Improve the connection to Public Right of Way (PRoW) and cycle network from Westenhanger Station to the north	Assumes only very minor physical works are required	No [C]
30	Connection of Sellindge Sites Sewage Outfalls to the Otterpool Network	Adjacent to site boundary	Connection from the Sellindge Sites Outfall, located off Ashford Road, to the 600m gravity pipe located on Barrow Hill Road.	Assume that the sewer would be within the highways boundary. Assume that the outflow would be buried below ground. Assumes that the working width would be <10m, to give a working area of <1ha.	No [D]
31	Connection of sewers from east of the site to the WWTW in the west of the site	Adjacent to site boundary	600mm gravity pipe connection areas to the east of Barrow Hill to the WWTW in the north-west of the site.	Assume that the sewer would be within the highways boundary. Assume that the outflow would be buried below ground.	No [D]

Map ID	Location/Short Description	Distance/ Direction form site[1]	Description of works	Assumptions	Taken forwards to Step 2 [Reasoning]
				Assumes that the working width would be <10m, to give a working area of <1ha	
32	A20 Ashford Small Roundabout	Adjacent to site boundary	Monitor and manage approach to determine whether the junction is likely to reach capacity in the future, and consider appropriate mitigation measures at that time.	Assume any works required would be within the current highway boundary.	No [A, B]
1: N= North; E=East, S=South, W=West					

3.2 Step 2

3.2.1 Constraints maps are provided in Appendix B. The constraints identified have been reviewed, and the potential impacts of the four works areas 19-22 taken forward from Step 1 considered in order to identify the potential for significant effects. Table 2 to Table 5 set out for each item of works:

- The key baseline information for each topic;
- The potential impacts which could occur;
- Best practice mitigation which it is assumed the statutory undertaker will apply; and
- The likely significant effects, and justification for the conclusion.

3.2.2 The tables cover the following works:

- Table 2 - Ref. 19: Sewerage connection to discharge off-site to Sellindge Waste Water Treatment Works (refer to Figures 2a and 2b in Appendix B)
- Table 3 - Ref. 20: Connection with Sellindge Grid Substation (refer to Figures 2a and 2b in Appendix B)
- Table 4 - Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW (refer to Figures 3a and 3b in Appendix B)
- Table 5 - Ref. 22: Water main reinforcement to Paddlesworth Reservoir (refer to Figures 4a and 4b in Appendix B)

Conclusion

3.2.3 Based on the review of off-site infrastructure works they are not considered likely to give rise to significant effects either alone, cumulatively with the proposed Development or with each other.

Ref. 19: Sewage connection to discharge off-site to Sellindge Waste Water Treatment Works

Table 2 Consideration of potential significant effects for Ref. 19 Sewage connection to discharge off-site to Sellindge Waste Water Treatment Works (see Figure 2a and 2b)

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Agriculture and soils	It is unclear if the area is in agricultural usage but assumed likely. The soils in the study area are provisionally identified as predominantly Grade 2 with some Grade 3 soils, Grade 2 and Grade 3a are classified as Best and Most Versatile (BMV) soil.	Construction: Potential for temporary loss of agricultural land	Implementation of a Code of Construction Practice (CoCP) including Soil Management Plan Reinstatement of land following completion of construction	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Operation: Potential for permanent loss of or change to agricultural land during operation due to a requirement for a wayleave either side of the utility	Agreement with the landowner, if required.	X – The scale of agricultural land loss is likely to be very minor, and therefore unlikely to be significant
Air Quality	Nearest sensitive receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area. .	Construction: Potential for temporary construction dust impacts	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Increase in emissions from construction traffic	Implementation of a Construction Traffic Management Plan (CTMP), if required	X – The increase in construction traffic will be managed, and therefore unlikely to be significant
		Operation: No impacts anticipated	N/A	N/A
Biodiversity	There are no designated ecological sites within the study area. Deciduous woodland priority habitat is located to the west of the sewage works. Presence of other habitats unknown. Potential for riverine habitats associated with the watercourse crossing the site. Presence of protected species unknown.	Construction: Impacts to habitats	Avoidance of priority habitats during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – No direct impacts to the priority habitat, therefore unlikely to be significant
		Construction: Impacts to species	Avoidance of impacts during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of mitigation unlikely to be significant
		Operation: Impacts to habitats and species	Standard operational management measures (if required)	X – With the implementation of mitigation unlikely to be significant
Climate	N/A	Construction: Impacts of greenhouse gas (GHG) emissions	N/A	X – Emissions associated with the embodied carbon of the materials and construction traffic would be negligible due to the scale of the works, therefore unlikely to be significant
		Construction: Resilience to climate change	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Operation: Impacts of GHG emissions	N/A	X – Maintenance would result in negligible emissions, therefore unlikely to be significant
		Operation: Resilience to climate change	Consideration through the design process	X – With the implementation of standard mitigation unlikely to be significant
Cultural Heritage	No designated heritage assets are located within the study area. The nearest listed building is located 500m north of the route. Kent HER data does not identify any non-designated heritage assets in the study area. The area is located in an Archaeological Notification Area (some neolithic potential, general background archaeological potential). The Kent HER data shows two archaeological findspots (TR 03 NE 217 and TR 03 NE 218) in the study area.	Construction: Impact to designated heritage assets	N/A	X – No designated heritage assets likely to be impacted (either physically or through setting effects) due to distance from the route
		Construction: Impacts to unknown archaeology	Completion of an archaeological desk based assessment and implementation of the recommendations within the assessment	X – There is a high potential for archaeology in the area, it is considered that this could be adequately mitigated, and therefore unlikely to be significant.
		Operation: No impacts anticipated	N/A	X

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Geology, Hydrogeology and Land Quality	The underlying geology is likely to be similar to Otterpool Park, comprising superficial deposits of Alluvium, Head, and bedrock of the Lower Greensand Group and Weald Clay Formation. The Alluvium is a Secondary (A) Aquifer and parts of the Lower Greensand formation are Principal Aquifers. No groundwater source protection zones are present. Potential contamination sources include the sewage works, HS1 and the M20.	Construction: Impacts on human health	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Construction: Impacts on groundwater and surface water	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Human Health	N/A	Construction: Combined impacts on human health from air quality, contaminated land, visual, noise and vibration, flood risk and transport	Implementation of CoCP and CTMP, if required	X – With implementation of CoCP and CTMP and due to the short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
Landscape and Visual Impact	No landscape designations. Within the Wealden Greensand National Character Area. Public footpath HE309 crosses the route adjacent to the sewage works. Nearest residential receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area.	Construction: Impacts on visual receptors	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts on landscape receptors	Implementation of a CoCP	X – Due to existing built up nature with HS1 and the M20, and short-term and temporary nature of impacts, unlikely to be significant
		Operation: No further impacts anticipated due to sewage pipe location below ground	N/A	X
Noise and Vibration	Noise Important Area (NIA) located on the M20 to the north-east of the works. Nearest sensitive receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area.	Construction: Noise impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Construction: Vibration impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Socio-economic and Community	No community services or businesses identified within the study area. Refer to the ProW discussed in the Transport section.	No impacts anticipated	N/A	X
Surface Water Resources and Flood Risk	East Stour River, an Environment Agency Designated Main river, is located approximately 200m south. The sewage works is located within a Flood Zone 2 and 3 associated with the East Stour River. A watercourse crosses the route at the western end of the site, between the sewage works and the substation, not designated as an EA main river.	Construction: Impacts of pollution	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Construction: Increase in flood risk	Implementation of a CoCP Flood Risk Activity Permits, if required	X – With the implementation of standard mitigation unlikely to be significant
		Operation: Impacts of pollution, including nutrient loading	Good design of works Upgrade of sewage works (i.e. a quality upgrade) to reduce nutrient loading in accordance with the requirements of Natural England due to the Stodmarsh Special Area of Conservation (note that this is a prerequisite of this works coming forward).	X – With the implementation of mitigation unlikely to be significant
		Operation: No further impacts anticipated due to sewage pipe location below ground	N/A	X
Transport	HS1 rail line required to be crossed. Surrounding road network. Public footpath HE309 crosses the route adjacent to the sewage works.	Construction: Impacts of severance on the footpath	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of delay on the surrounding road network	Implementation of a Construction Traffic Management Plan (CTMP) if required.	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
		Construction: Impacts of delay on HS1	Avoidance of impacts to HS1 through design, for example by using trenchless technology in accordance with procedures and approvals required (Ref. 9). Agreement of possessions if required with HS1.	X – Impacts would be avoided, therefore unlikely to be significant
		Construction: Impacts on amenity of the footpath	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of fear and intimidation on users of footpath and the surrounding road network	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – Impacts are likely to be negligible, short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts related to accidents and safety	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Waste and Resource Management	N/A	Construction: Generation of construction waste	Implementation of Site Waste Management Plan (SWMP)	X – Construction waste will be minimal, and managed through a SWMP, therefore unlikely to be significant
		Construction: Consumption of material resources	N/A	X – Resource consumption will be minimal due to scale of works, therefore, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Cumulative effects (with other developments)	Otterpool Park – located adjacent at the closest point Ref. 20: Connection with Sellindge Grid Substation Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW Note that no other developments (as set out within ES Appendix 2.5) are identified within the study area.	Construction: Cumulative impacts with Otterpool Park	Implementation of a CoCP Mitigation measures implemented for Otterpool Park	X – The impacts associated with the works are unlikely to result in significant effects following mitigation, and due to the scale of the impacts in comparison to Otterpool Park.
		Construction: Cumulative impacts with Ref. 20	N/A	X – Construction timescales would not overlap, the electricity works are required prior to first occupation, and the sewer discharge will not be required until a certain number of homes are occupied.
		Construction: Cumulative impacts with Ref. 21	N/A	X – Both sewage discharges will not be required, these are mutually exclusive options.
		Operation: No impacts anticipated	N/A	X

Ref. 20: Connection with Sellindge Grid Substation

Table 3 Consideration of potential significant effects for Ref. 20: Connection with Sellindge Grid Substation (see Figure 2a and 2b)

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Agriculture and soils	The route is located within open space, it is unclear if the area is in agricultural usage. The soils in the study area are provisionally identified as Grade 2 and Grade 3, Grade 2 and Grade 3A is classified as Best and Most Versatile (BMV) soil.	Construction: Potential for temporary loss of agricultural land during construction.	Implementation of a CoCP including Soil Management Plan Reinstatement of land following completion of construction	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Operation: Potential for permanent loss of or change to agricultural land during operation due to a requirement for a wayleave either side of the utility.	Agreement with the landowner, if required.	X – The scale of agricultural land loss is likely to be very minor, and therefore unlikely to be significant
Air Quality	Nearest sensitive receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area.	Construction: Potential for temporary construction dust impacts	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Increase in emissions from construction traffic	Implementation of a CTMP, if required	X – The increase in construction traffic will be managed, and therefore unlikely to be significant
		Operation: No impacts anticipated	N/A	N/A
Biodiversity	There are no designated ecological sites within the study area. Deciduous woodland priority habitat is located to the west of the sewage works and east of Sellindge Grid Substation. Potential for riverine habitats associated with the watercourse crossing the site. Presence of other habitats unknown. Presence of protected species unknown.	Construction: Impacts to habitats	Avoidance of priority habitats during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – Impacts to the priority habitat could be avoided, therefore unlikely to be significant
		Construction: Impacts to species	Avoidance of impacts during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of mitigation unlikely to be significant
		Operation: Impacts to habitats and species	Standard operational management measures (if required)	X – With the implementation of mitigation unlikely to be significant
Climate	N/A	Construction: Impacts of greenhouse gas (GHG) emissions	N/A	X – Emissions associated with the embodied carbon of the materials and construction traffic would be negligible due to the scale of the works, therefore unlikely to be significant
		Construction: Resilience to climate change	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Operation: Impacts of GHG emissions	N/A	X – Maintenance would result in negligible emissions, therefore unlikely to be significant
		Operation: Resilience to climate change	Consideration through the design process	X – With the implementation of standard mitigation unlikely to be significant
Cultural Heritage	No designated heritage assets are located within the study area. The nearest listed building is 500m north of the works. Kent HER data does not identify any non-designated heritage assets in the vicinity of the works.	Construction: Impact to designated heritage assets	N/A	X – No designated heritage assets likely to be impacted (either physically or through setting effects) due to distance from works
		Construction: Impacts to unknown archaeology	Completion of an archaeological desk based assessment and implementation	X – There is a high potential for archaeology in the area, it is considered

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
	The area is located in an Archaeological Notification Area (some aneolithic potential, general background archaeological potential). The Kent HER data shows two archaeological findspots (TR 03 NE 217 and TR 03 NE 218) in the vicinity of the works.		of the recommendations within the assessment	that this could be adequately mitigated, and therefore unlikely to be significant.
		Operation: No impacts anticipated	N/A	X
Geology, Hydrogeology and Land Quality	The underlying geology is likely to be similar to Otterpool Park, comprising superficial deposits of Alluvium, Head, and bedrock of the Lower Greensand Group and Weald Clay Formation. The Alluvium is a Secondary (A) Aquifer and parts of the Lower Greensand formation are Principal Aquifers. No groundwater source protection zones are present. Potential contamination sources include the sewage works, HS1 and the M20.	Construction: Impacts on human health	Implementation of a CoCP	X - With the implementation of standard mitigation unlikely to be significant
		Construction: Impacts on groundwater and surface water	Implementation of a CoCP	X - With the implementation of standard mitigation unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Human Health	N/A	Construction: Combined impacts on human health from air quality, contaminated land, visual, noise and vibration, flood risk and transport	Implementation of CoCP and CTMP, if required	X - With implementation of CoCP and CTMP and due to the short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
Landscape and Visual Impact	No landscape designations. Within the Wealden Greensand National Character Area. Public footpath HE309 crosses the route adjacent to the sewage works (to the east of the substation). Nearest residential receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area.	Construction: Impacts on visual receptors	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts on landscape receptors	Implementation of a CoCP	X – Due to existing built up nature with HS1 and the M20, and short-term and temporary nature of impacts, unlikely to be significant
		Operation: No further impacts anticipated due to location below ground	N/A	X
Noise and Vibration	NIA located on the M20 to the north-east of the works. Nearest sensitive receptor approximately 50m north of the works, north of the M20, comprising White Lodge, Harringe Lane. No other sensitive receptors identified within the study area.	Construction: Noise impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Construction: Vibration impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Socio-economic and Community	No community services or businesses identified within the study area. Refer to the PRoW discussed in the Transport section.	No impacts anticipated	N/A	X
Surface Water Resources and Flood Risk	East Stour River, an Environment Agency Designated Main river, is located approximately 200m south. The sewage works is located within a Flood Zone 2 and 3 associated with the East Stour River. A watercourse crosses the route at the western end of the site, between the sewage works and the substation.	Construction: Impacts of pollution	Implementation of a CoCP	X - With the implementation of standard mitigation unlikely to be significant
		Construction: Increase in flood risk	Implementation of a CoCP Flood Risk Activity Permits, if required	X - With the implementation of standard mitigation unlikely to be significant
		Operation: No further impacts anticipated due to sewage pipe location below ground	N/A	X
Transport	HS1 rail line required to be crossed. Surrounding road network.	Construction: Impacts of severance on the footpath	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant

Topic	Baseline/Constraints (Figure 2a and 2b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
	Public footpath HE309 crosses the route adjacent to the sewage works.	Construction: Impacts of delay on the surrounding road network	Implementation of a CTMP, if required	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of delay on HS1	Avoidance of impacts to HS1 through design, for example by using trenchless technology in accordance with procedures and approvals required (Ref. 9) Agreement of possessions if required with HS1.	X – Impacts would be avoided, therefore unlikely to be significant
		Construction: Impacts on amenity of the footpath	Temporary closure or diversion of the ProW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of fear and intimidation on users of footpath and the surrounding road network	Temporary closure or diversion of the ProW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – Impacts are likely to be negligible, short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts related to accidents and safety	Temporary closure or diversion of the ProW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No additional impacts	N/A	X
Waste and Resource Management	N/A	Construction: Generation of construction waste	Implementation of Site Waste Management Plan (SWMP)	X – Construction waste will be minimal, and managed through a SWMP, therefore unlikely to be significant
		Construction: Consumption of material resources	N/A	X – Resource consumption will be minimal due to scale of works, therefore, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Cumulative effects (with other developments)	Otterpool Park – located adjacent at the closest point Ref. 19 Sewage discharge off-site to Sellindge Waste Water Treatment Works Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW Note that no other developments (as set out within ES Appendix 2.5) are identified within the study area.	Construction: Cumulative impacts with Otterpool Park	Implementation of a CoCP Range of mitigation measures implemented for Otterpool Park	X – The impacts associated with the works are unlikely to result in significant effects following mitigation, and due to the scale of the impacts in comparison to Otterpool Park.
		Construction: Cumulative impacts with Ref. 19	N/A	X – Construction timescales would not overlap, the sewage discharge will not be required until a certain number of homes are occupied, grid connection works are required prior to first occupation
		Construction: Cumulative impacts with Ref. 21	N/A	X – Construction timescales would not overlap, the sewage discharge will not be required until a certain number of homes are occupied, whereas grid connection works are required prior to first occupation
		Operation: No impacts anticipated	N/A	X

Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW

Table 4 Consideration of potential significant effects for Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW (see Figure 3a and 3b)

Topic	Baseline/Constraints (Figure 3a and 3b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Agriculture and soils	It is likely that the area is in agricultural usage. The soils in the study area are provisionally identified as Grade 3, with a small area of Grade 2 land in the north east of the study area. Grade 2 and Grade 3a are classified as Best and Most Versatile (BMV) soil.	Construction: Potential for temporary loss of agricultural land during construction.	Implementation of a CoCP including Soil Management Plan Reinstatement of land following completion of construction	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Operation: Potential for permanent loss of or change to agricultural land during operation due to a requirement for a wayleave either side of the utility.	Agreement with the landowner, if required.	X – The scale of agricultural land loss is likely to be very minor, and therefore unlikely to be significant
Air Quality	The nearest sensitive receptors are approximately 300m south of works (Partridge Farm off Harringe Lane) and approximately 300m north east of the works (north of HS1 and the M20, White Lodge, Harringe Lane).	Construction: Potential for temporary construction dust impacts	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Increase in emissions from construction traffic	Implementation of a CTMP, if required	X – The increase in construction traffic will be managed, and therefore unlikely to be significant
		Operation: No impacts anticipated	N/A	significant/A
Biodiversity	There are no designated ecological sites within the study area. Deciduous woodland priority habitat located to the north of the East Stour River and south of HS1 in the west of the study area. Presence of other habitats unknown, however, riverine and floodplain habitats are likely to be present. Presence of protected species unknown.	Construction: Impacts to habitats	Avoidance of priority habitats during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – Assuming that priority habitats can be avoided during the design process, unlikely to be significant
		Construction: Impacts to species	Avoidance of impacts during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of mitigation unlikely to be significant
		Operation: Impacts to habitats and species	Standard operational management measures (if required)	X – With the implementation of mitigation unlikely to be significant
Climate	N/A	Construction: Impacts of greenhouse gas (GHG) emissions	N/A	X – Emissions associated with the embodied carbon of the materials and construction traffic would be negligible due to the scale of the works, therefore unlikely to be significant
		Construction: Resilience to climate change	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Operation: Impacts of GHG emissions	N/A	X – Maintenance would result in negligible emissions, therefore unlikely to be significant
		Operation: Resilience to climate change	Consideration through the design process	X – With the implementation of standard mitigation unlikely to be significant
Cultural Heritage	No designated heritage assets are located within the study area. The nearest listed building is over 500m north of the works. Kent HER data identifies a potential ironworks (TR 03 NE 28) and Partridge Farm (MKE88391) approximately 250m south of the works.	Construction: Impact to designated heritage assets	N/A	X – No designated heritage assets likely to be impacted (either physically or through setting effects) due to distance from works
		Construction: Impacts to non-designated heritage assets	Implementation of a CoCP	X – No non-designated heritage assets likely to be impacted physically, and any setting impacts if experienced would be

Topic	Baseline/Constraints (Figure 3a and 3b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
	The area is located in an Archaeological Notification Area (some aneolithic potential, general background archaeological potential). The Kent HER data shows an archaeological findspot (TR 03 NE 223) in the study area.			temporary and short-term, therefore unlikely to be significant
		Construction: Impacts to unknown archaeology	Completion of an archaeological desk based assessment and implementation of the recommendations within the assessment	X – There is a high potential for archaeology in the area, it is considered that this could be adequately mitigated, and therefore unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Geology, Hydrogeology and Land Quality	The underlying geology is likely to be similar to Otterpool Park, comprising superficial deposits of Alluvium, Head, and bedrock of the Lower Greensand Group and Weald Clay Formation. The Alluvium is a Secondary (A) Aquifer and parts of the Lower Greensand formation are Principal Aquifers. No groundwater source protection zones are present. Potential contamination sources include the sewage works, HS1 and the M20.	Construction: Impacts on human health	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Construction: Impacts on groundwater and surface water	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Human Health	N/A	Construction: Combined impacts on human health from air quality, contaminated land, visual, noise and vibration, flood risk and transport	Implementation of CoCP and CTMP, if required	X – With implementation of CoCP and CTMP and due to the short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
Landscape and Visual Impact	No landscape designations. Within the Wealden Greensand National Character Area. Public footpath HE367 and AE656 follow the northern bank of the East Stour River in the west of the study area. AE480 connects with HE367 to the south of the East Stour River. The nearest residential receptors are approximately 300m south of works (Partridge Farm off Harringe Lane) and approximately 300m north east of the works (north of HS1 and the M20, White Lodge, Harringe Lane).	Construction: Impacts on visual receptors	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts on landscape receptors	Implementation of a CoCP	X – Due to existing built up nature with HS1 and the M20, and short-term and temporary nature of impacts, unlikely to be significant
		Operation: No further impacts anticipated due to location below ground	N/A	X
Noise and Vibration	NIA located on the M20 to the north-east of the works. The nearest sensitive receptors are approximately 300m south of works (Partridge Farm off Harringe Lane) and approximately 300m north east of the works (north of HS1 and the M20, White Lodge, Harringe Lane).	Construction: Noise impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Construction: Vibration impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Socio-economic and Community	No community services or businesses identified. Refer to the ProW discussed in the Transport section.	No impacts anticipated	N/A	X
Surface Water Resources and Flood Risk	East Stour River, an Environment Agency Designated Main river located within the study area. The Flood Zone 2 and 3 associated with the East Stour River is also located within the study area. A watercourse joins the East Stour River at the western end of the route (watercourse not designated as a main river).	Construction: Impacts of pollution	Implementation of a CoCP	X – With the implementation of standard mitigation unlikely to be significant
		Construction: Increase in flood risk	Implementation of a CoCP Flood Risk Activity Permits, if required	X – With the implementation of standard mitigation unlikely to be significant
		Construction: Changes in flow conveyance and/or local hydraulics due to crossing of East Stour River	Avoidance of a river crossing if possible Appropriate design of river crossing (e.g. directional drilling), agreed with the Environment Agency, if necessary	X – With the implementation of standard mitigation unlikely to be significant

Topic	Baseline/Constraints (Figure 3a and 3b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
			Appropriate construction method and measures Implementation of a CoCP	
		Operation: Impacts of pollution, including nutrient loading	Operational management measures for maintenance	X – With the implementation of standard mitigation unlikely to be significant
		Operation: Increase in flood risk	N/A	X – No operational impacts anticipated due to below ground nature of works
		Operation: Changes in flow conveyance and/or local hydraulics due to crossing of East Stour River	Avoidance of a river crossing if possible Appropriate design of river crossing (e.g. directional drilling), agreed with the Environment Agency, if necessary	X – With the implementation of standard mitigation unlikely to be significant
Transport	HS1 line required to be crossed. Surrounding road network. Public footpath HE367 and AE656 follow the northern bank of the East Stour River in the west of the study area.	Construction: Impacts of delay on HS1	Avoidance of impacts to HS1 through design, for example by using trenchless technology in accordance with procedures and approvals required (Ref. 9) Agreement of possessions if required with HS1.	X – Impacts would be avoided, therefore unlikely to be significant
		Construction: Impacts of severance on the footpaths	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of delay on the surrounding road network	Implementation of a CTMP, if required	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts on amenity of the footpath	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of fear and intimidation on users of footpath and the surrounding road network	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – Impacts are likely to be negligible, short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts related to accidents and safety	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No additional impacts	N/A	X
Waste and Resource Management	N/A	Construction: Generation of construction waste	Implementation of Site Waste Management Plan (SWMP)	X – Construction waste will be minimal, and managed through a SWMP, therefore unlikely to be significant
		Construction: Consumption of material resources	N/A	X – Resource consumption will be minimal due to scale of works, therefore, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Cumulative effects (with other developments)	Otterpool Park – located adjacent at the closest point Ref. 19 Sewage discharge off-site to Sellindge Waste Water Treatment Works Ref. 20: Connection with Sellindge Grid Substation	Construction: Cumulative impacts with Otterpool Park	Implementation of a CoCP Range of mitigation measures implemented for Otterpool Park	X – The impacts associated with the works are unlikely to result in significant effects following mitigation, and due to the scale of the impacts in comparison to Otterpool Park.

Topic	Baseline/Constraints (Figure 3a and 3b)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
	Note that no other developments (as set out within ES Appendix 2.5) are identified within the study area.	Construction: Cumulative impacts with Ref. 19	N/A	X –Both sewage discharges will not be required, these are mutually exclusive options.
		Construction: Cumulative impacts with Ref. 20	N/A	X – Construction timescales would not overlap, the sewage discharge will not be required until a certain number of homes are occupied, electricity works are required prior to first occupation
		Operation: No impacts anticipated	N/A	X

Ref. 22: Water main reinforcement to Paddlesworth Reservoir

Table 5 Consideration of likely significant effects of Ref. 22: Water main reinforcement to Paddlesworth Reservoir (see Figure 4a and 4b)

Topic	Baseline/Constraints (Figure 4a and 4B)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Agriculture and soils	The existing water main is largely located within existing highway boundaries. Exceptions are: East of Beachborough road and west of The Street the route crosses agricultural land, shown as Grade 3 (potentially BMV land) Between the Eurotunnel and Elvington Lane the route crosses agricultural land largely comprising Grade 5, with a small area of Grade 2 (BMV land) Between Elvington Lane and Paddlesworth Reservoir the route crosses Grade 3 (potentially BMV land) The alternate route section crosses Grade 3 (potentially BMV land) between Sandling Road and Beachborough.	Construction: Potential for temporary loss of agricultural land during construction.	Implementation of a CoCP including Soil Management Plan Reinstatement of land following completion of construction	X – An existing water main is located in the area, therefore the general area will already have restricted agricultural use. The impact will be short-term and temporary, therefore, unlikely to be significant
		Operation: Potential for permanent loss of or change to agricultural land during operation due to a requirement for a wayleave either side of the utility.	Agreement with the landowner, if required.	X – An existing water main is located in the area, therefore there will already be restrictions on the agricultural use. The scale of additional agricultural land loss likely to be small, and could be minimised during design development. Therefore, unlikely to be significant.
Air Quality	Scattered residential properties are located adjacent to the route, off the highway, along the length of the route. A concentration of residential properties is located in Peene.	Construction: Potential for temporary construction dust impacts	Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Increase in emissions from construction traffic	Implementation of a CTMP, if required	X – The increase in construction traffic will be managed, and therefore unlikely to be significant
		Operation: No impacts anticipated	N/A	N/A
Biodiversity	SAC: Passes through the Folkestone to Etchinghill Escarpment SAC between the Eurotunnel and Elvington Lane (for approximately 500m). Sites of Special Scientific Interest: Passes directly adjacent to Folkestone to Etchinghill Escarpment SSSI where the route is not located on the highway, east of Beachborough road and west of The Street, and passes through the SSSI between the Eurotunnel and Elvington Lane (for approximately 500m). Ancient woodland: A number of areas of designated ancient woodland are located alongside the route where it is located within the highway boundary. The route passes directly adjacent to Asholt Wood where the route is not located on the highway, east of Beachborough road and west of The Street. The alternate route (Ref. 22b) passes directly adjacent to Cowtye wood, an unnamed woodland block, and Little Stone Wood where the route is not located within the highway boundary on the stretch between Sandling Road and Beachborough. Local Wildlife Sites: A number of Local Wildlife Sites are located adjacent to the route. Priority habitat: Passes adjacent to a number of areas of deciduous woodland priority habitat. Passes through deciduous woodland priority habitat and lowland calcareous grassland habitat at the eastern end of the route (at Folkestone to Etchinghill Escarpment SAC and SSSI). Presence of other habitats unknown.	Construction: Impacts to designated sites (SAC, SSSI, Ancient Woodland and the Local Wildlife Sites)	Avoidance of designated sites during design, informed by ecology surveys as required. Consultation with Natural England and relevant statutory bodies if the route is within the zone of influence of the SAC/SSSIs. Completion of a Habitats Regulation Screening Assessment, if required. Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of suitable mitigation, and on the basis that the existing water main also follows this route, unlikely to be significant.
		Construction: Impacts to habitats	Avoidance of priority habitats during design, informed by ecology surveys as required Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of suitable mitigation, and on the basis that the existing water main also follows this route, is unlikely to be significant.
		Construction: Impacts to species	Avoidance of impacts during design, informed by suitable ecology surveys Implementation of a CoCP, informed by suitable ecology surveys Implementation of appropriate mitigation informed by suitable ecology surveys	X – With the implementation of suitable mitigation, and on the basis that the existing water main also follows this route, unlikely to be significant.

Topic	Baseline/Constraints (Figure 4a and 4B)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
	Presence of protected species unknown.	Operation: Impacts to designated sites	Implementation of suitable operational management measures	X – An existing water main also follows this route, therefore limited additional operational impacts are anticipated.
		Operation: Impacts to habitats and species	Implementation of suitable operational management measures	X – An existing water main also follows this route, therefore limited additional operational impacts are anticipated.
Climate	N/A	Construction: Impacts of GHG emissions	N/A	X – Emissions associated with the embodied carbon of the materials and construction traffic would be negligible due to the scale of the works, therefore unlikely to be significant
		Construction: Resilience to climate change	Implementation of a CoCP	X – With the implementation of standard mitigation, unlikely to be significant
		Operation: Impacts of GHG emissions	N/A	X – Maintenance would result in negligible emissions, therefore unlikely to be significant
		Operation: Resilience to climate change	Consideration through the design process	X – With the implementation of standard mitigation unlikely to be significant
Cultural Heritage	Scheduled monuments: World War I Practice Trenches Tolsford Hill (1463181), 250m north of the alternate route (Ref. 22b) section Bowl barrow and pillbox on Cherry Garden Hill (1011771), 40m east of the route Registered parks and gardens: Grade II Sandling Park (1000262), adjacent east and south of the route Listed buildings: Grade II Frogholt House (1061085), 150m south of the route Grade II Old Kent Cottage (1061087), 200m south Grade II Magpie Cottage (1061086), 200m south Grade II Brook House (1061084), 200m south Grade II Pound Farm House (1344195), 150m south Grade II The Barley Mow (1068593), 160m south Grade II The Old Vicarage (1061091), 190m south Grade II POUND (1067812), 200m south Grade II Church Cottages (1061090), 240m south Grade II Peene House and West Lodge (1068546), 20m north of Ref. 22a Conservation areas: Frogholt Conservation Area, adjacent south of the route Newington Conservation Area, 80m south of the route Non-designated heritage assets: A number of non-designated assets including farmsteads, monuments and listed buildings are present along the route. Archaeology: The entire route is located within an archaeological notification area. Archaeological findspots are present within the area of the route (Kent HER data).	Construction: Impacts to designated heritage assets – physical impacts	Avoidance of physical impacts to designated heritage assets, informed by suitable heritage surveys as required	X – No designated heritage assets likely to be physically impacted
		Construction: Impacts to designated heritage assets – setting impacts	Implementation of a CoCP	X – Setting impacts will be short-term and temporary, and can be mitigated through a CoCP, therefore unlikely to be significant
		Construction: Impacts to non-designated heritage assets – physical impacts	Avoidance of heritage assets through the design process Implementation of a CoCP	X - No non-designated heritage assets likely to be impacted physically following an appropriate design process
		Construction: Impacts to non-designated heritage assets – setting impacts	Implementation of a CoCP	X – Setting impacts will be short-term and temporary, and can be mitigated through a CoCP, therefore unlikely to be significant
		Construction: Impacts to unknown archaeology	Completion of an archaeological desk-based assessment and implementation of the recommendations within the assessment	X – The existing water main will have already required below ground works in the vicinity, so although there is a high potential for archaeology in the area, it is unlikely that additional finds will be made. With the implementation of mitigation, unlikely to be significant.
		Operation: No impacts anticipated	N/A	N/A

Topic	Baseline/Constraints (Figure 4a and 4B)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Geology, Hydrogeology and Land Quality	Superficial deposits of alluvium and head deposits present on the southern section of the route. On the approach to Paddlesworth Reservoir superficial deposits of Clay-with-flints formation are present. Bedrock geology varies over the length of the route. Superficial geology includes Secondary (A) and Secondary (undifferentiated) Aquifers. Bedrock geology includes Principal and Secondary (A) Aquifers. A groundwater source protection zone I (the inner protection zone) is located in the east of the route, and the associated Zone II and Zone III are located within the study area for the eastern section of the route. Potential contamination sources include the highways and railways. .	Construction: Impacts on human health	Implementation of a CoCP	X - With the implementation of standard mitigation, unlikely to be significant
		Construction: Impacts on groundwater and surface water	Implementation of a CoCP	X - With the implementation of standard mitigation, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Human Health	N/A	Construction: Combined impacts on human health from air quality, contaminated land, visual, noise and vibration, flood risk and transport	Implementation of CoCP and CTMP, if required	X - With implementation of CoCP and CTMP and due to the short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
Landscape and Visual Impact	The route is located within, or adjacent to, the Kent Downs Area of Outstanding Natural Beauty. Route located within the Wealden Greensand National Character Area (Ref. 70) and the North Downs National Character Area (Ref. 69). A number of public rights of way intersect with the route throughout the length of the route. The North Downs Way national trail also crosses the route in the east of the route. Scattered residential properties are located adjacent to the route, off the highway, along the length of the route. A concentration of residential properties is located in Peene.	Construction: Impacts on visual receptors	Implementation of a CoCP	X – Due to short-term and temporary nature unlikely to be significant
		Construction: Impacts on landscape receptors	Consultation with the AONB Unit and relevant statutory consultees. Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Due to the presence of an existing water main in this area, and use of existing infrastructure corridors for the majority of the route, unlikely to be significant
		Operation: No further impacts anticipated due to location below ground	N/A	X
Noise and Vibration	No NIAs within 250m. Scattered residential properties are located adjacent to the route, off the highway, along the length of the route. A concentration of residential properties is located in Peene.	Construction: Noise impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Construction: Vibration impacts	Implementation of a CoCP	X – With implementation of CoCP and due to short-term and temporary nature of impacts, and lack of receptors, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Socio-economic and Community	Businesses located along the route (identified from open source mapping) include: David Humphrey (surveyors) FRICS Various farm buildings Elham Valley Line trust (in Peene) Eurotunnel services No community buildings identified along the route. Refer to the PRoW discussed in the Transport section. The route crosses an area of countryside and Rights of Way Act 2000 in the area of the Folkestone to Etchinghill Escarpment where the route turns to the north.	Construction: Impacts to businesses	Avoidance of impacts to businesses through construction works Implementation of a CoCP	X – Likely that impacts to businesses can be avoided through standard construction measures, any remaining impacts would be of a short-term and temporary nature, therefore unlikely to be significant
		Construction: Impacts to common land	Consultation with the relevant statutory bodies Implementation of a CoCP	X – With the implementation of a CoCP and consultation and agreement with the relevant statutory bodies, and due to the short-term and temporary nature of the impact, unlikely to be significant
		Operation: No impacts anticipated	N/A	X

Topic	Baseline/Constraints (Figure 4a and 4B)	Potential Impacts	Assumed mitigation	Likely to be significant (✓ / X)
Surface Water Resources and Flood Risk	The route crosses the Seabrook Stream, an Environment Agency designated main river and associated flood zones between Beachborough road and Peene.	Construction: Impacts of pollution	Implementation of a CoCP	X - With the implementation of standard mitigation unlikely to be significant
		Construction: Increase in flood risk	Implementation of a CoCP Flood Risk Activity Permits, if required	X - With the implementation of standard mitigation unlikely to be significant
		Construction: Changes in flow conveyance and/or local hydraulics due to crossing of Seabrook Stream	Avoidance of a river crossing if possible Appropriate design of river crossing (e.g. directional drilling), agreed with the Environment Agency, if necessary Appropriate construction method and measures Implementation of a CoCP	X - With the implementation of standard mitigation unlikely to be significant
		Operation: Changes in flow conveyance and/or local hydraulics due to crossing of East Stour River	Avoidance of a river crossing if possible Appropriate design of river crossing (e.g. directional drilling), agreed with the Environment Agency, if necessary	X - With the implementation of standard mitigation unlikely to be significant
		Operation: No further impacts anticipated due to sewage pipe location below ground	N/A	X
Transport	Surrounding road network. A number of public rights of way intersect with the route throughout the length of the route. The North Downs Way national trail also crosses the route in the east of the route.	Construction: Impacts of severance on the footpaths	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of delay on the surrounding road network	Implementation of a CTMP, if required	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts on amenity of the footpath	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP	X – Impacts are likely to be short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts of fear and intimidation on users of footpath and the surrounding road network	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – Impacts are likely to be negligible, short-term and temporary, and therefore unlikely to be significant
		Construction: Impacts related to accidents and safety	Temporary closure or diversion of the PRoW if required by agreement with the LPA Implementation of a CoCP Implementation of a CTMP, if required	X – With the implementation of standard mitigation unlikely to be significant
		Operation: No additional impacts	N/A	X
Waste and Resource Management	N/A	Construction: Generation of construction waste	Implementation of SWMP	X – Construction waste will be minimal, and managed through a SWMP, therefore unlikely to be significant
		Construction: Consumption of material resources	N/A	X – Resource consumption will be minimal due to scale of works, therefore, unlikely to be significant
		Operation: No impacts anticipated	N/A	X
Cumulative effects (with other developments)	Otterpool Park – located adjacent at the closest point Note that no other developments (as set out within ES Appendix 2.5) are identified within the study area.	Construction: Cumulative impacts with Otterpool Park	Implementation of a CoCP Range of mitigation measures implemented for Otterpool Park	X – The impacts associated with the works are unlikely to result in significant effects following mitigation, and due to the scale of the impacts in comparison to Otterpool Park.

3.3 Step 3

3.3.1 No works have been carried forward from Step 2, therefore, Step 3 is not required.

4 Conclusion

4.1.1 An environmental assessment of off-site infrastructure works required for the construction of the proposed Development has been undertaken. A stepped process has been undertaken as described in section 1 in order to identify the potential for significant environmental effects and whether they are capable of mitigation to reduce to non-significant levels.

- Step 1: Identify, and review of the off-site infrastructure works which may be required, including consideration of the following to conclude which off-site infrastructure works it would be reasonable and proportionate to further assess:
  - The likely scale and duration of the works required;
  - The availability of appropriate information regarding the works required; and
  - If insufficient design detail, likely assumptions regarding the works that could be reasonably used to assess a worst case scenario, bearing in mind the above factors.
- Step 2: Review of publicly available baseline environmental information for the off-site infrastructure works taken forward from Step 1, and a high-level assessment of whether the off-site infrastructure works are likely to result in significant effects (either alone or cumulatively with the proposed Development).
- Step 3: For those works likely to have a significant effect at Step 2, assessment using the ES methodology (where possible).

4.1.2 The main technical difficulties in relation to predicting likely significant environmental effects of the off-site infrastructure works are the following:

- The Applicant has no absolute control over the nature and location of the final works, given that the majority of the works will be, for example, undertaken within the limits allowed by statutory undertakers e.g. highways upgrade works that are carried out under Section 278 of the Highways Act 1980 will be undertaken by the Highways Authorities and not the Applicant or utilities upgrades undertaken under the relevant legislation by the statutory undertaker;
- Uncertainties over the requirement for the highways works given that they depend on a ‘monitor and manage’ approach, which is driven by development ‘threshold triggers’;
- In some cases there is a high level of uncertainty associated with the reasonable worst-case assumptions regarding the nature and scale of the works.

4.1.3 Given the above, an assessment has been undertaken of the potential environmental effects of the off-site infrastructure works based upon its best understanding of the likely nature and location of the works where possible. This has included consideration of the infrastructure trigger thresholds and using worst-case assumptions of the works corridor widths to ensure that a ‘Rochdale envelope’ approach has been applied to the assessment of potential significant effects. Assumptions and technical difficulties have been highlighted within this process.

4.1.4 The works taken forward from Step 1 due to the scale of works comprise the following:

- Ref. 19: Sewage discharge off-site to Sellindge WWTW;
- Ref. 20: Connection with Sellindge Grid Substation;
- Ref. 21: Sewage outfall to the East Stour River from the onsite WWTW; and
- Ref. 22: Water main reinforcement to Paddlesworth Reservoir.

4.1.5 A review has been undertaken of publicly available baseline environmental information for the off-site infrastructure works taken forward from Step 1, and a high-level assessment of whether the off-site infrastructure works are likely to result in significant effects.

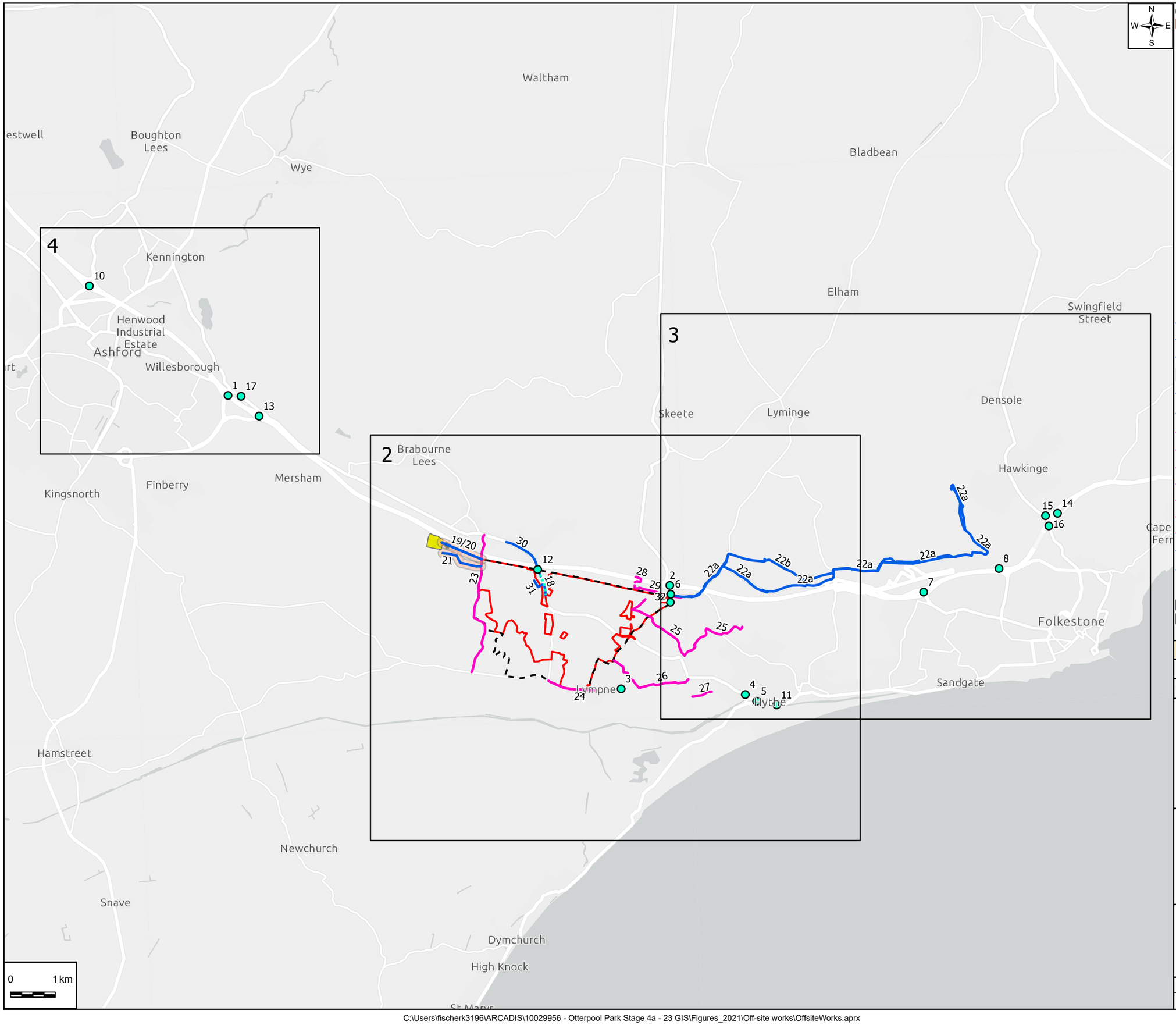
4.1.6 Based on the review of these off-site infrastructure works and the measures that would be expected to be taken by the statutory undertaker, they are not considered likely to give rise to significant effects either alone, in combination with each other or cumulatively with the proposed Development.

5 References

Reference	Title
Ref. 1	Kent County Council Heritage Maps. Available online at https://webapps.kent.gov.uk/KCC.HeritageMaps.Web.Sites.Public/Default.aspx [Accessed 10 February 2022]
Ref. 2	F&HDC Explore Folkestone & Hythe District interactive map. Available online at: https://folkestone-hythe.maps.arcgis.com/apps/webappviewer/index.html?id=95f9db5c8443496aa543e7d4193717c8 [Accessed 10 February 2022]
Ref. 3	British Geological Survey. Geology of Britain Viewer. Available online at: https://mapapps.bgs.ac.uk/geologyofbritain/home.html [Accessed 10 February 2022]
Ref. 4	Natural England MAGiC map. Available online at: https://magic.defra.gov.uk/ [Accessed 10 February 2022]
Ref. 5	Kent County Council Public Rights of Way map. Available online at: https://webapps.kent.gov.uk/countrysideaccesscams/standardmap.aspx [Accessed 10 February 2022]
Ref. 6	Environment Agency Main River map. Available online at: https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386 [Accessed 10 February 2022]
Ref. 7	Environment Agency Flood Map for Planning. Available online at: https://flood-map-for-planning.service.gov.uk/ [Accessed 10 February 2022]
Ref. 8	Ministry of Housing, Communities and Local Government (July 2021) National Planning Policy Framework
Ref. 9	Network Rail, High Speed Ltd (August 2020) The Developers Handbook. Available online at: https://www.networkrail.co.uk/wp-content/uploads/2019/05/Outside-Parties-Development-Handbook..pdf [Accessed March 2022]

Appendix A

Overview figure



- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- 1: M20 J10
- 2: M20 J11
- 3: Aldington Road/Lympne Hill
- 4: A261 London Road/Barrack Hill
- 5: A259/Dymchurch Road/Military Road double yellow line scheme
- 6: A20 Ashford Road/A20 Junction 11
- 7: M20 Junction 12 Eastbound Merge and Junction 13 Eastbound Diverge
- 8: M20 Junction 13 South Roundabout: Widen the entry width on the Churchill Ave approach and localised widening on the A20 Castle Hill Bridge approach
- 10: M20 Junction 9 - Improvements to Trinity Road and Fougeres Way
- 11: A259 Prospect Road/Stade Street
- 12: Highway Works to Barrow Hill
- 13: M20 J10A
- 14: A20
- 15: Spitfire Way
- 16: Alkham Valley Road interchange
- 17:A20 Hythe Road/The Street
- 18: Highway Works to Barrow Hill
- 19: Sewage discharge off-site to Sellindge Waste Water Treatment Works
- 20: Connection with Sellindge Grid Substation
- 21: Sewage outfall to the East Stour River from the onsite WWTW
- 100m Corridor
- 22a: Water main reinforcement from Paddlesworth Reservoir (edited from original source)
- 22b: Alternate option for water main reinforcement from Paddlesworth Reservoir (edited from original source)
- 23: Harringe Lane
- 24: Aldington Road between Otterpool Avenue and Stone Street
- 25: HE281 footpath
- 26: HE293 footpath
- 27: HE343 byway
- 28: HE359 foothpath
- 29: HE371 footpath
- 30: Connection from Sellindge Sites sewage outfalls to the Otterpool network
- 31: Connection of sewers from east of the site to the WWTW in the west of the site
- 32: A20 Ashford Small Roundabout
- Substation
- Waste Water Treatment Works
- Ref. 9 no longer used

REV	Date	Description	Drawn	Check	Approv
01	11/01/22	FOR INFORMATION	KF	EN	OC

ARCADIS
80Fen
80 Fenchurch Street
London
EC3M 4BY

OTTERPOOL PARK
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FIGURE 1:
APPROXIMATE LOCATION OF OFF-SITE INFRASTRUCTURE WORKS
PAGE 1

scale	original size	datum	grid
1:80,000	A3	Sx	OSGB

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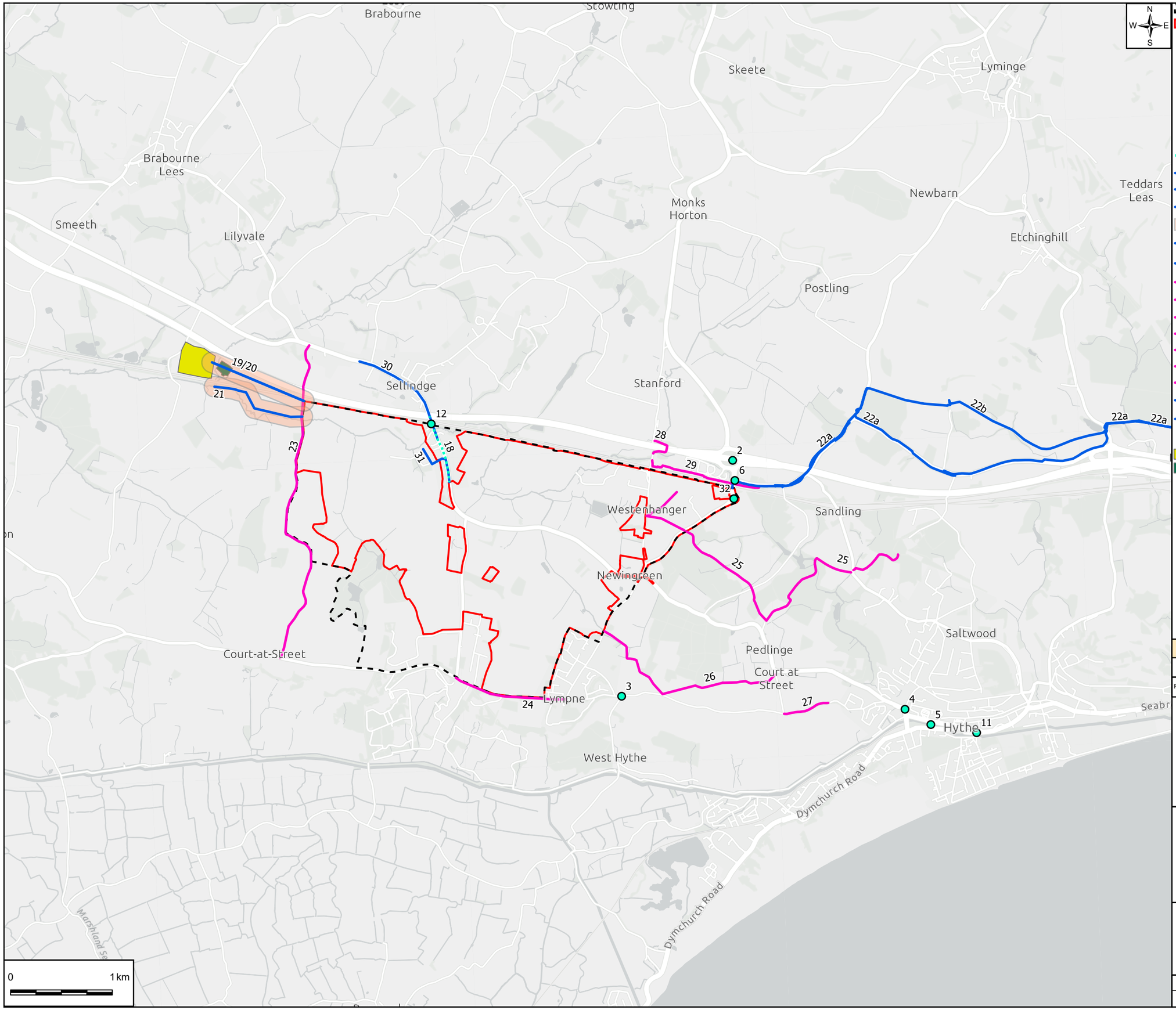

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Ref. 9 no longer used

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FIGURE 1:
APPROXIMATE LOCATION OF OFF-SITE INFRASTRUCTURE WORKS
PAGE 2

scale	original size	datum	grid
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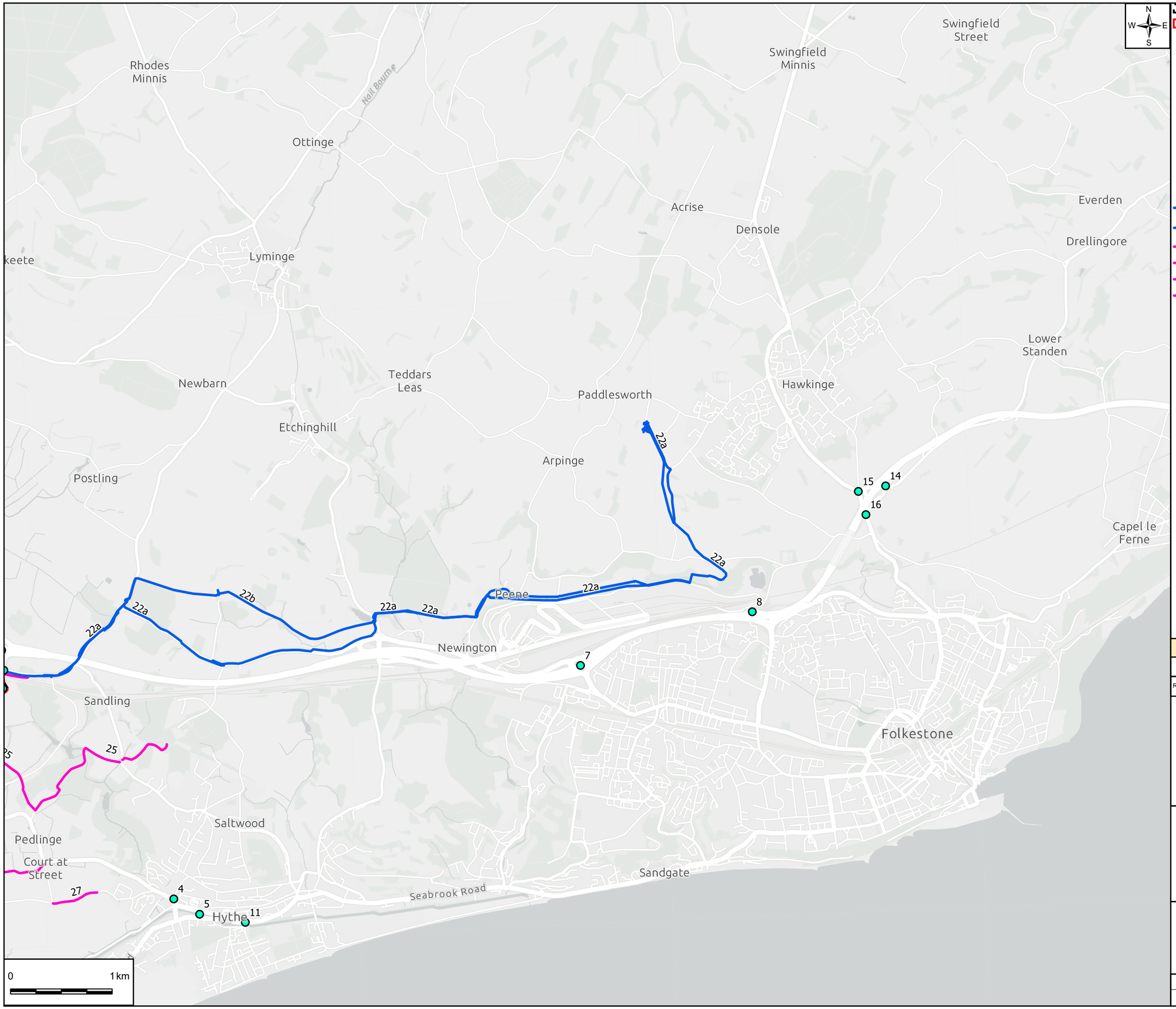

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Ref. 9 no longer used

REV	Date	Description	Drawn	Check	Approv
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OTTERPOOL PARK
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FIGURE 1:
APPROXIMATE LOCATION OF OFF-SITE INFRASTRUCTURE WORKS
PAGE 3

scale	original size	datum	grid
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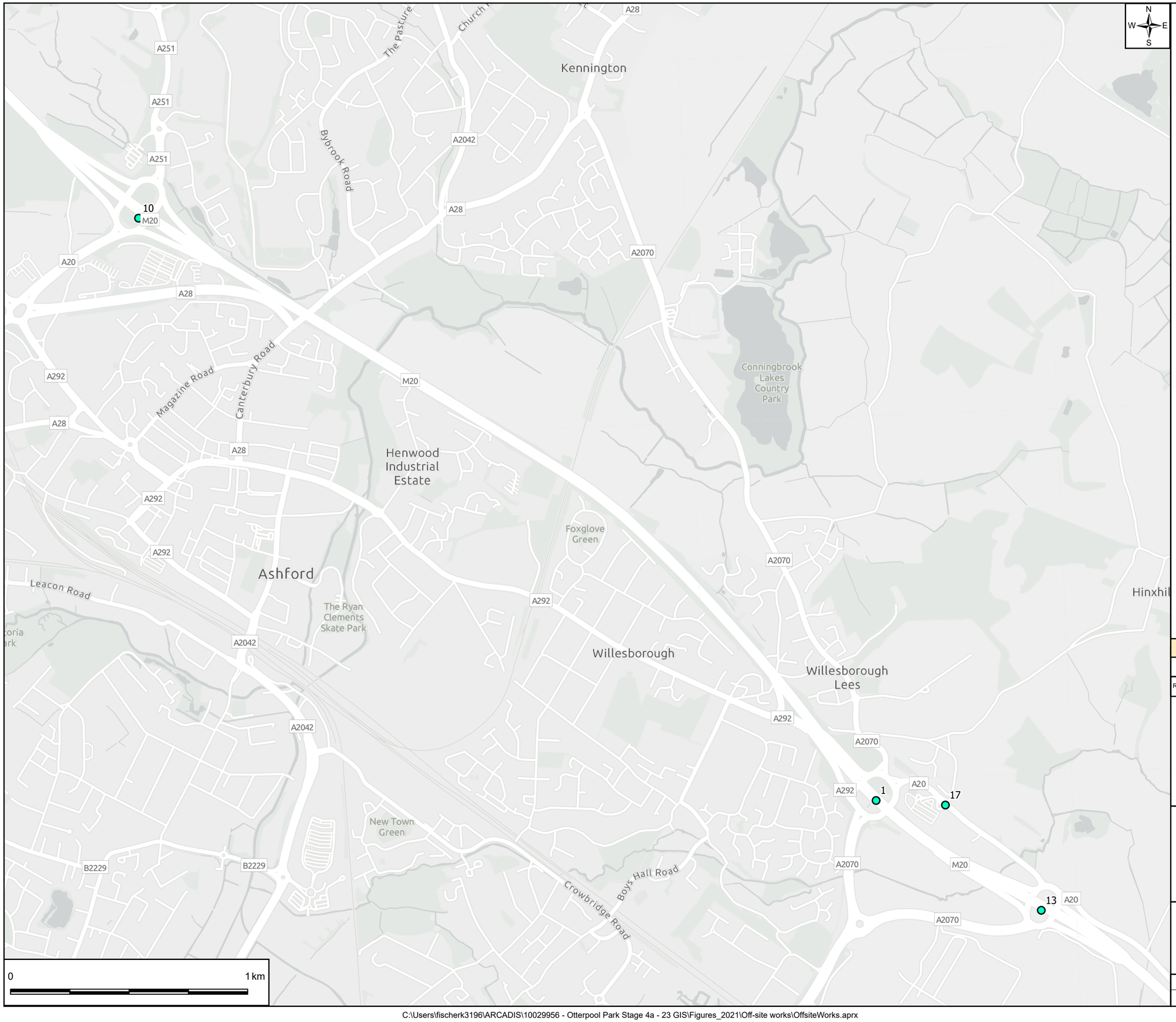

Ref. 9 no longer used

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01	11/01/22	FOR INFORMATION	KF	EN	OC

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FIGURE 1:
APPROXIMATE LOCATION OF OFF-SITE INFRASTRUCTURE WORKS

PAGE 4

scale	original size	datum	grid
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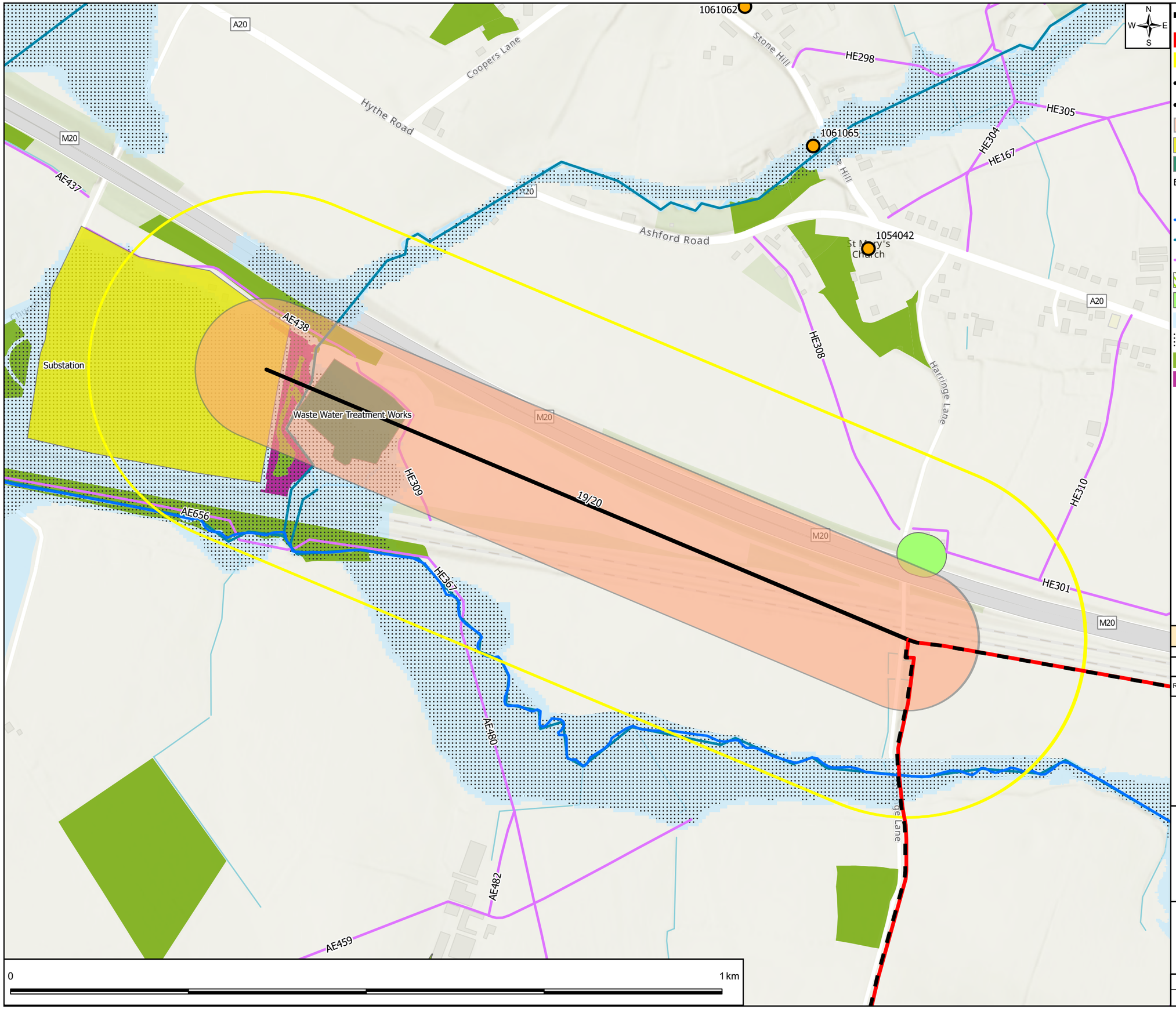
Appendix B

Constraints figures



- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- Study Area
- 19: Sewage discharge off-site to Sellindge Waste Water Treatment Works
- 20: Connection with Sellindge Grid Substation
- 100m Corridor
- Substation
- Waste Water Treatment Works

Environmental Constraints

- Listed Buildings
- Main Rivers
- Watercourses
- Public Rights of Way
- Ancient Woodland
- Noise Important Areas
- Flood Zone 2
- Flood Zone 3
- Deciduous woodland
- No main habitat but additional habitats present

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 2A: CONSTRAINTS PLAN FOR OFF-SITE WORKS REF. 19 AND 20

scale	original size	datum	grid
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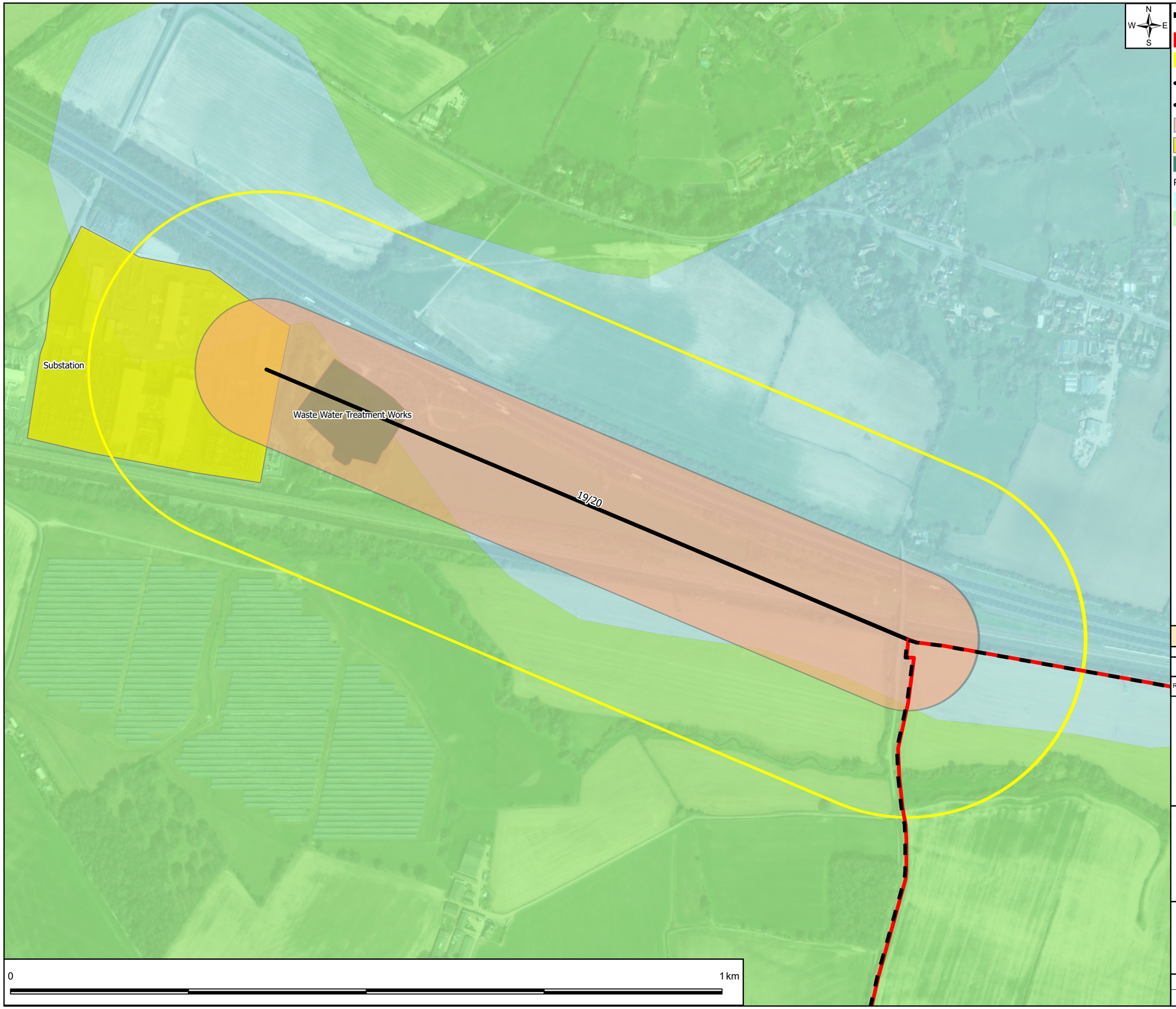

- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- Study Area
- 19: Sewage discharge off-site to Sellindge Waste Water Treatment Works
- 20: Connection with Sellindge Grid Substation
- 100m Corridor
- Substation
- Waste Water Treatment Works

Provisional Agricultural Land Classification

- Grade 2
- Grade 3

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 2B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION REF. 19 and 20

scale	original size	datum	grid
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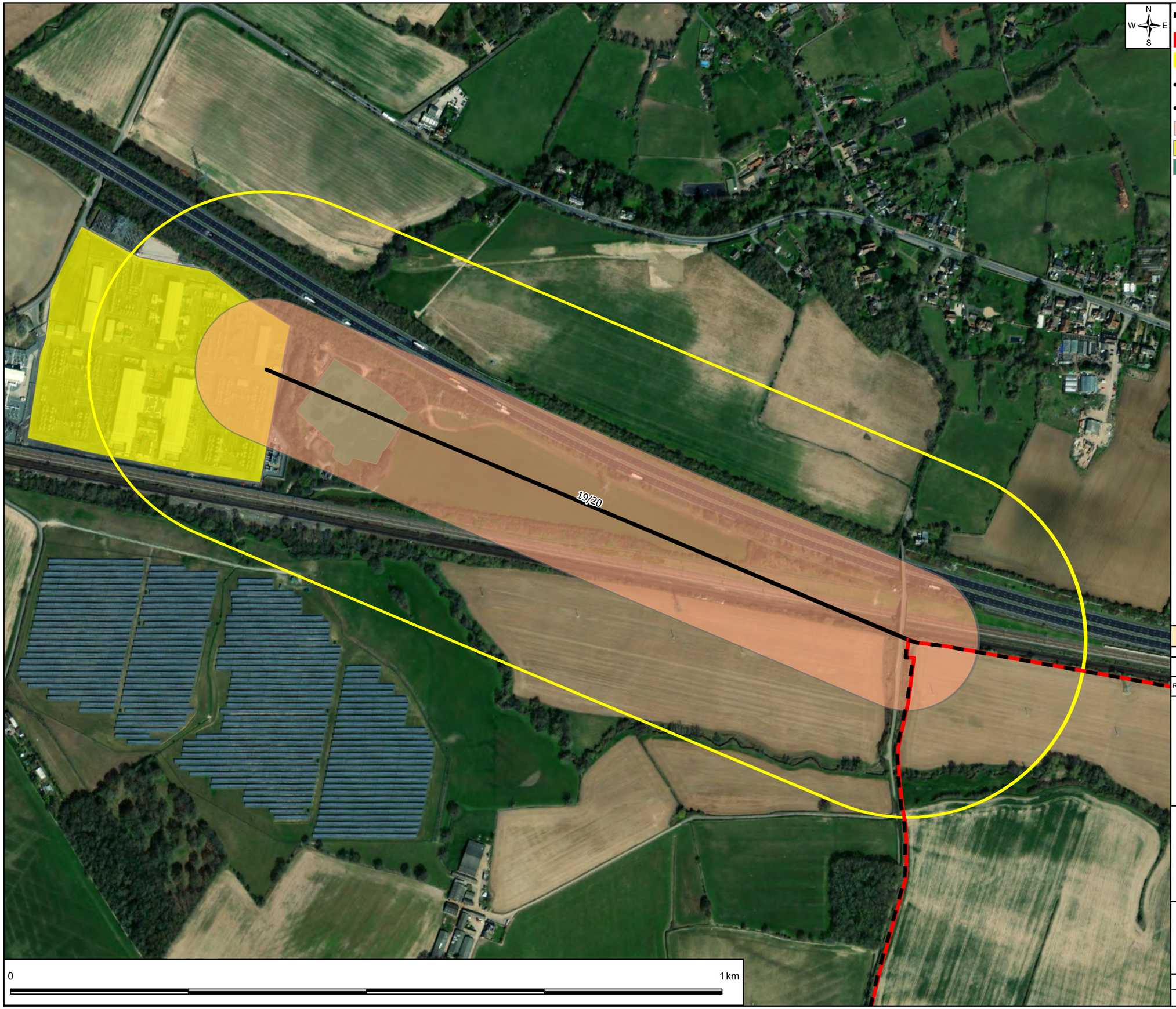

- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- Study Area
- 19: Sewage discharge off-site to Sellindge Waste Water Treatment Works
- 20: Connection with Sellindge Grid Substation
- 100m Corridor
- Substation
- Waste Water Treatment Works

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 2C: AERIAL IMAGERY FOR OFF-SITE WORKS REF. 19 AND 20

scale	original size	datum	grid
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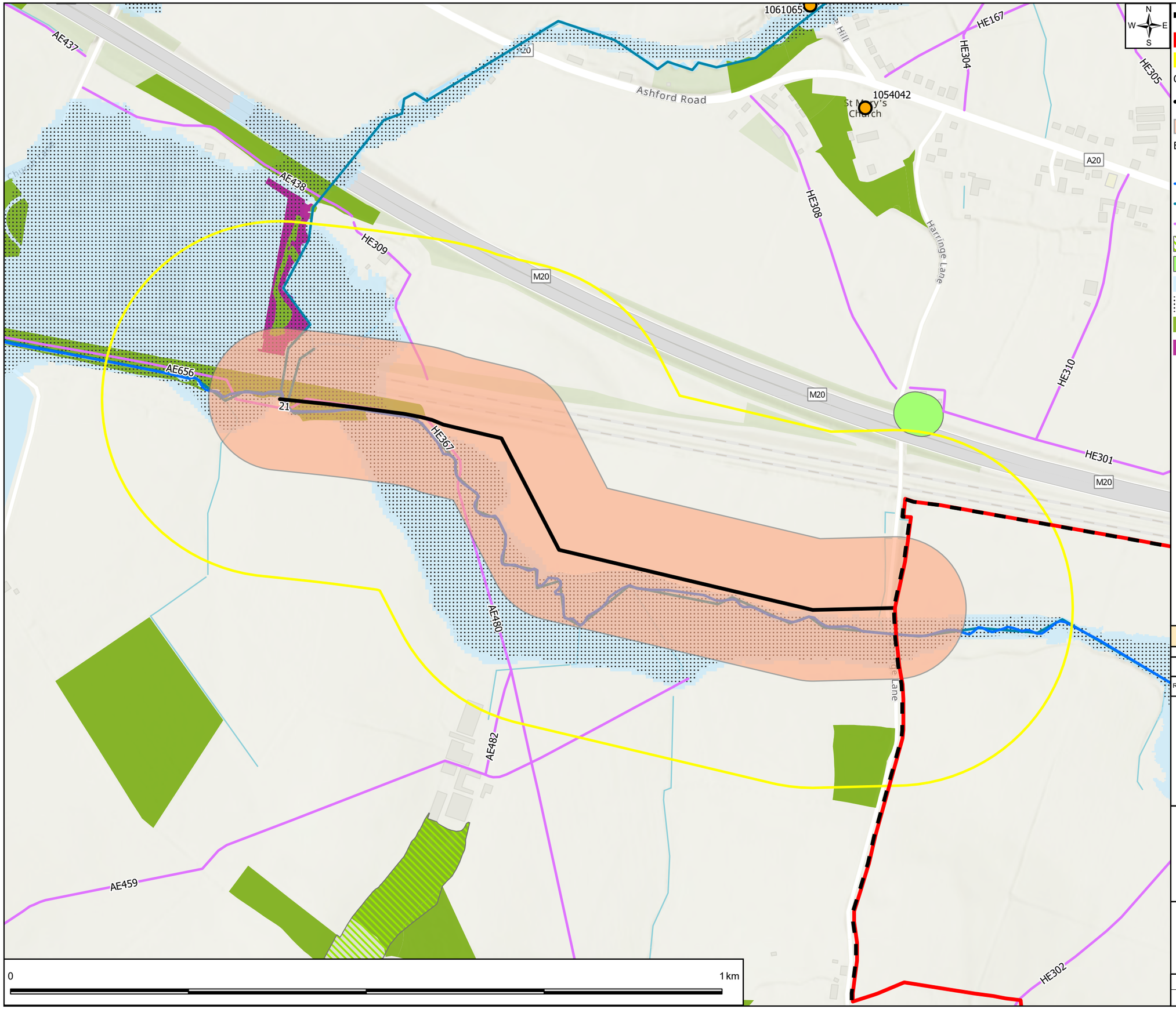

- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- Study Area

Off-site Infrastructure

- 21: Sewage outfall to the East Stour River from the onsite WWTW
- 100m Corridor

Environmental Constraints

- Listed Buildings
- Main Rivers
- Watercourses
- Public Rights of Way
- Ancient Woodland
- Noise Important Areas
- Flood Zone 2
- Flood Zone 3
- Deciduous woodland
- No main habitat but additional habitats present

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 3A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF. 21

scale	original size	datum	grid
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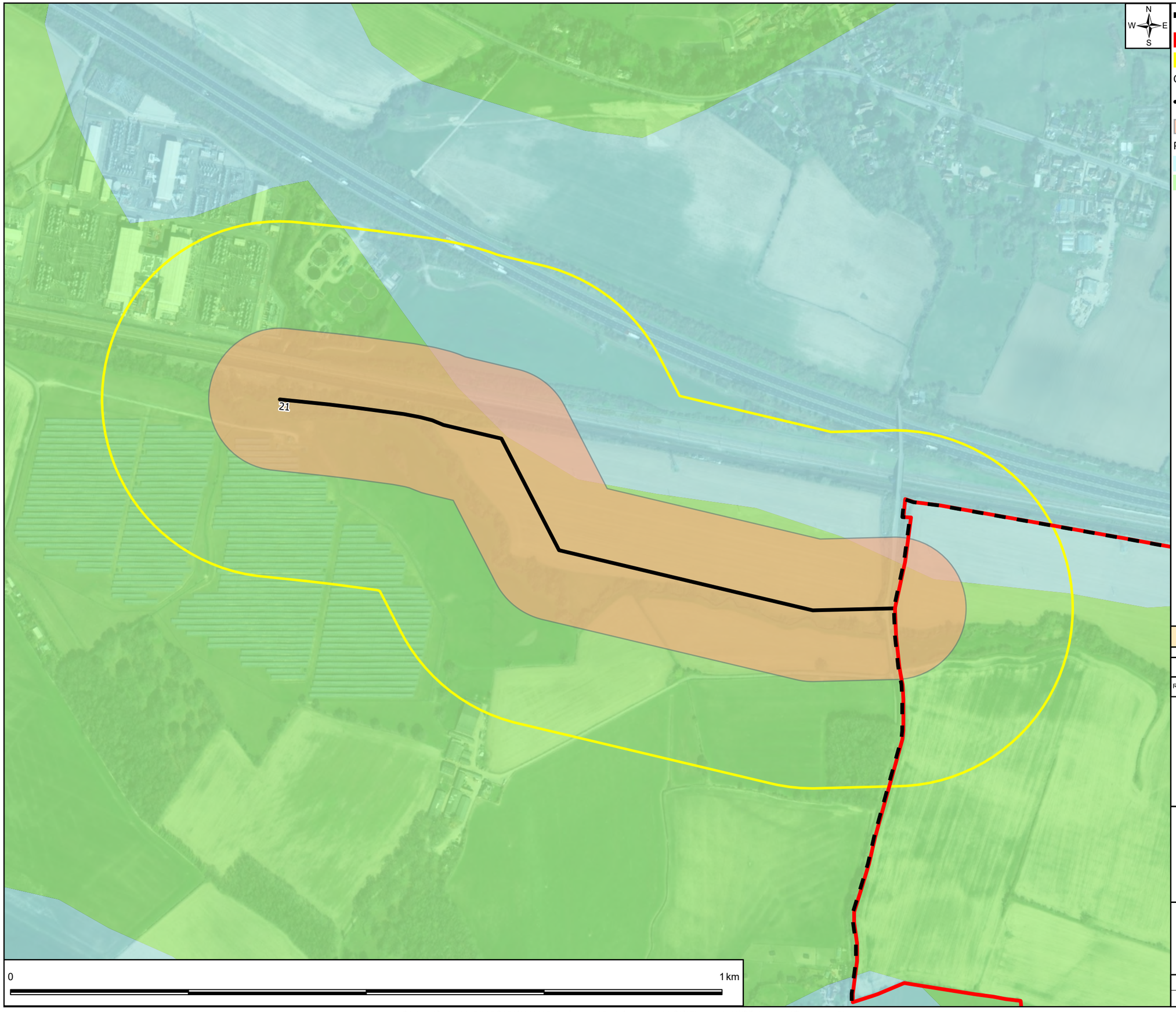

Framework Masterplan

Outline Planning Application Boundary (OPA)

Study Area

Off-site Infrastructure

21: Sewage outfall to the East Stour River from the onsite WWTW

100m Corridor

Provisional Agricultural Land Classification

Grade 2

Grade 3

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FIGURE 3B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION REF 21

scale	original size	datum	grid
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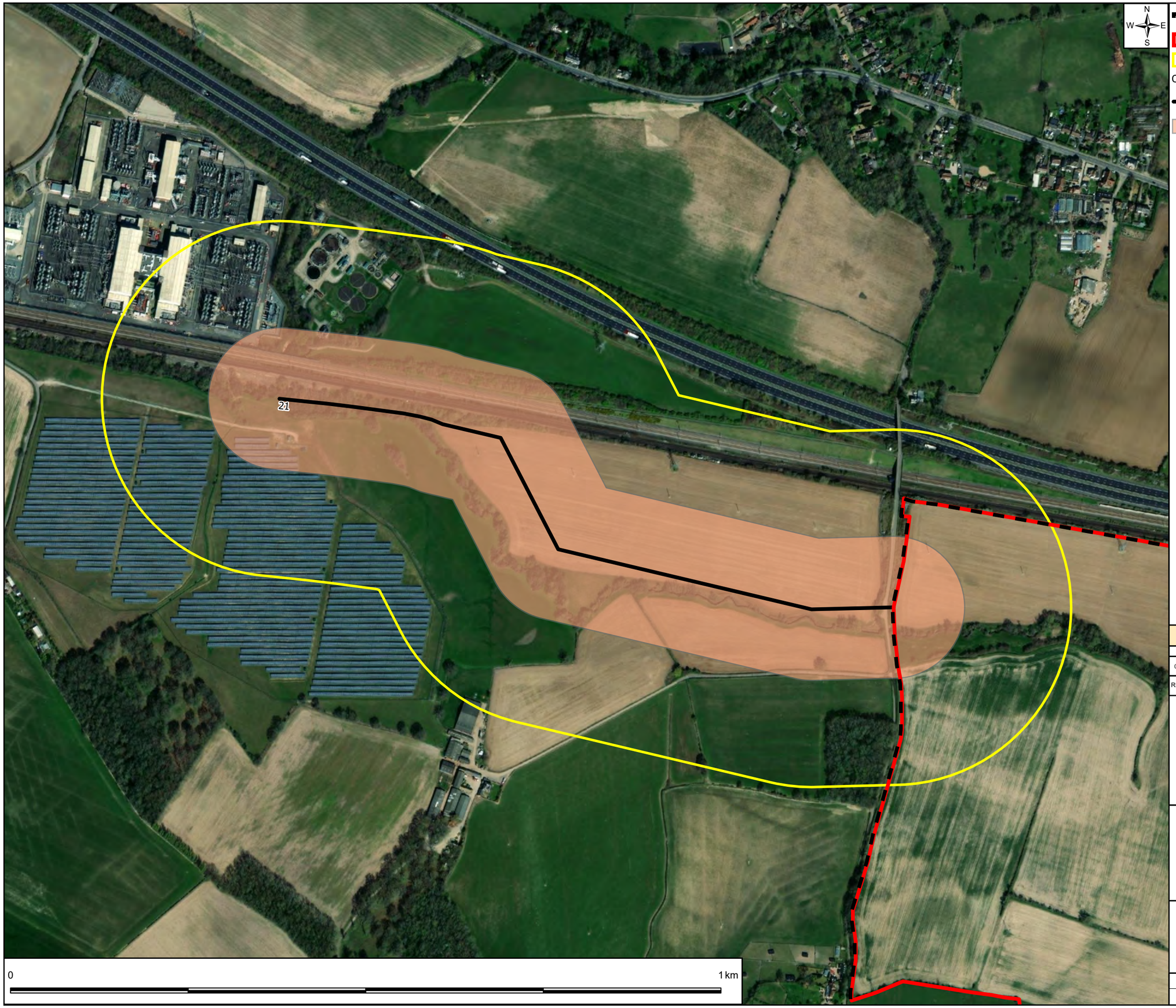

Framework Masterplan

Outline Planning Application Boundary (OPA)

Study Area

Off-site Infrastructure

21: Sewage outfall to the East Stour River from the onsite WWTW

100m Corridor

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 3C: AERIAL IMAGERY FOR OFF-SITE WORKS REF. 21

scale	original size	datum	grid
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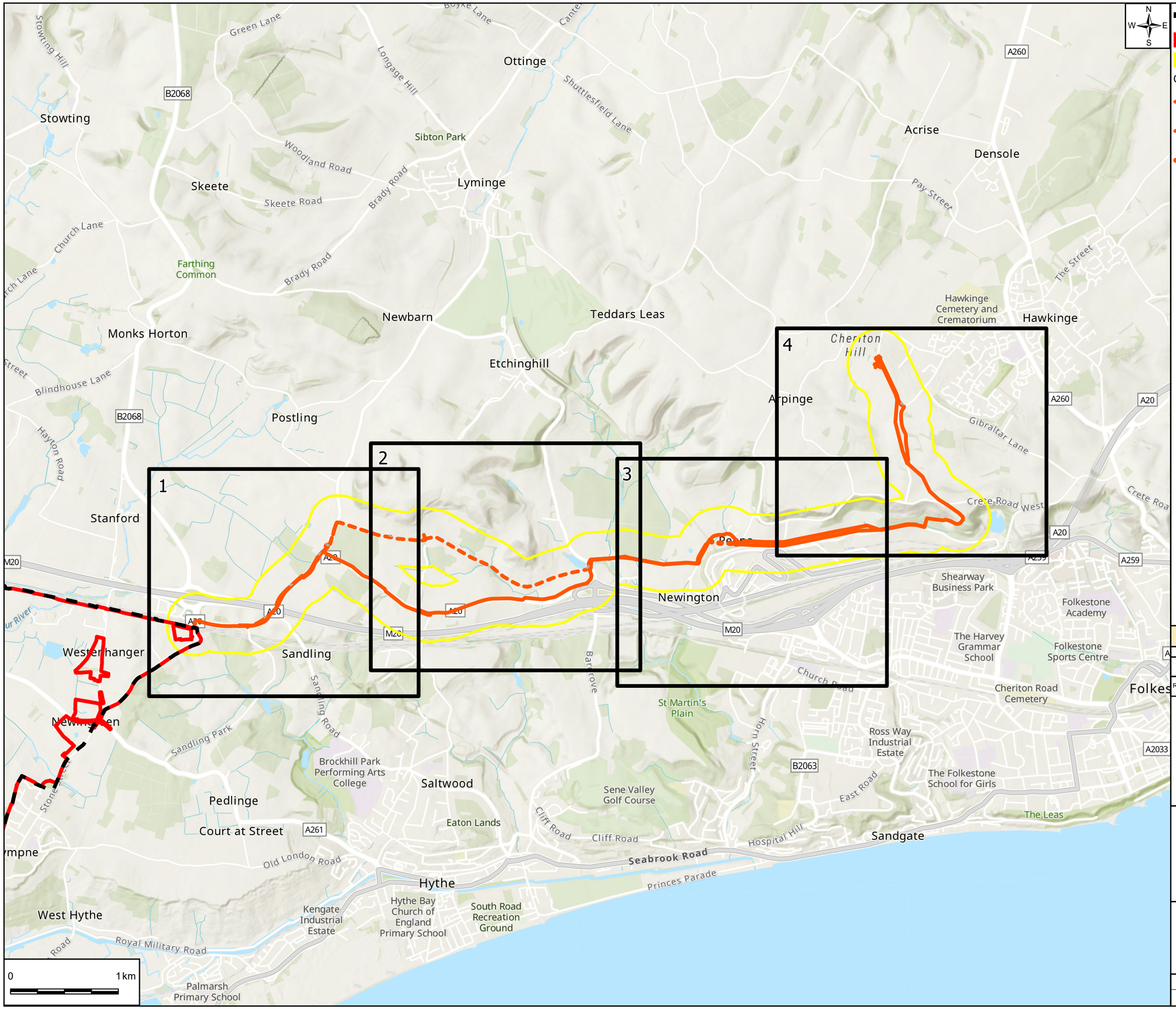

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF.22
PAGE 0

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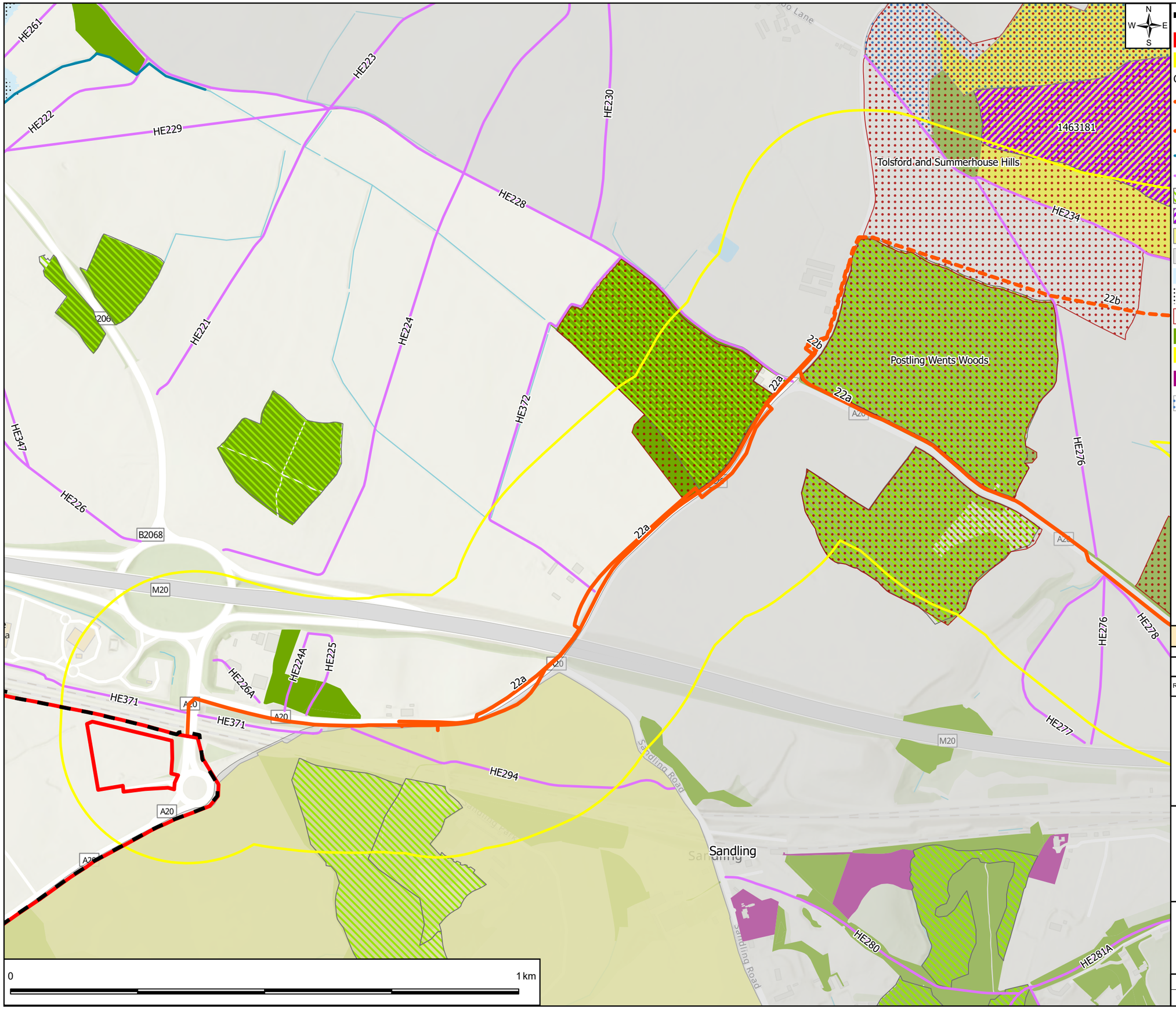

- Framework Masterplan
- Outline Planning Application Boundary (OPA)
- Study Area

Off-site Infrastructure

- 22a: Water main reinforcement from Paddlesworth Reservoir*
- 22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*
- Watercourses
- Public Rights of Way
- Ancient Woodland
- Scheduled Monuments
- Registered Parks and Gardens
- Areas of Outstanding Natural Beauty
- Flood Zone 2
- Flood Zone 3
- Local Wildlife Sites
- Deciduous woodland
- Lowland calcareous grassland
- No main habitat but additional habitats present
- Countryside and Rights of Way Act 2000

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF.22 PAGE 1

scale	original size	datum	grid
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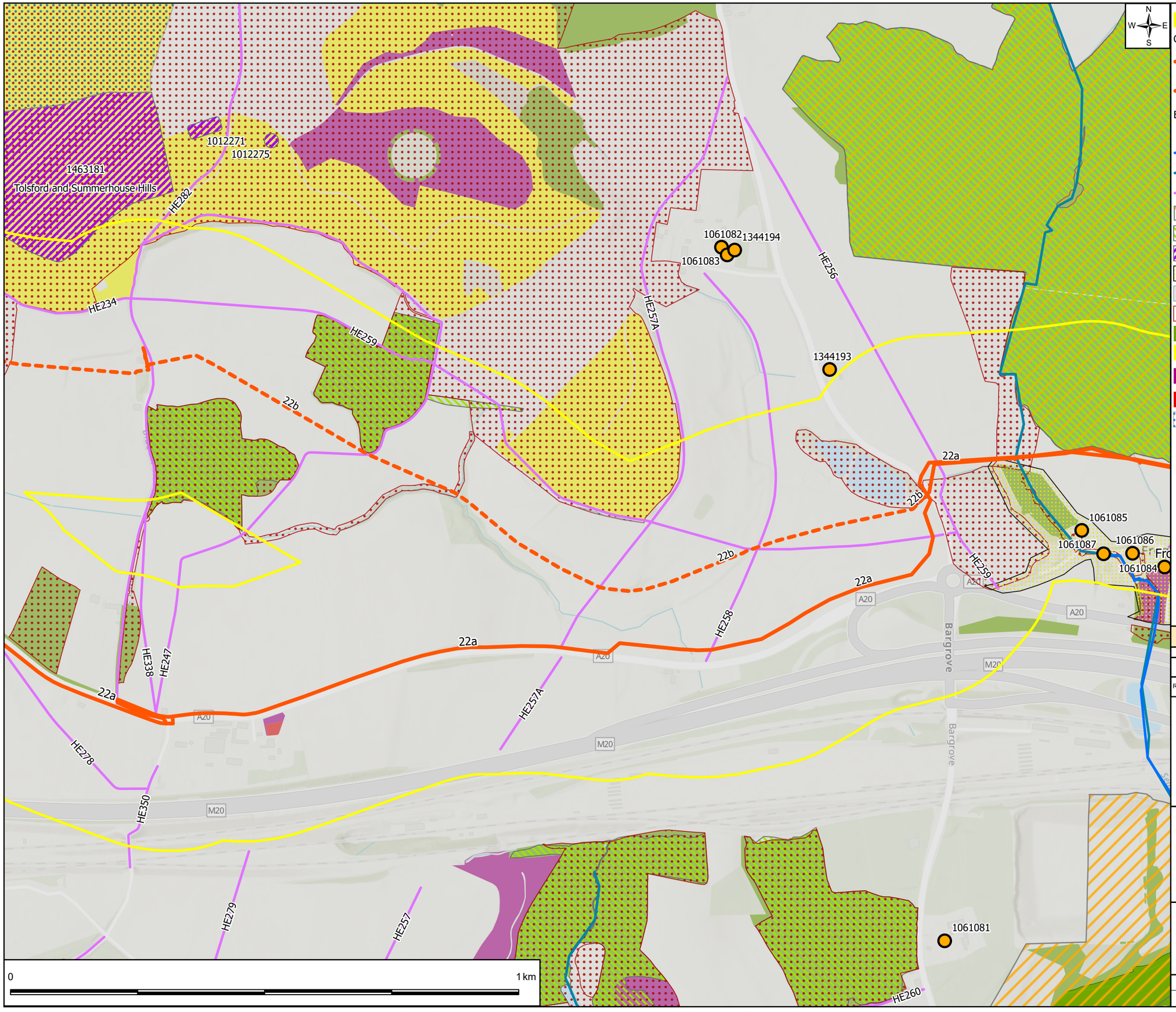

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Environmental Constraints

Listed Buildings

Main Rivers

Watercourses

Public Rights of Way

Sites of Special Scientific Interest

Ancient Woodland

Scheduled Monuments

Conservation Areas

Areas of Outstanding Natural Beauty

Local Wildlife Sites

Deciduous woodland

Lowland calcareous grassland

No main habitat but additional habitats present

Traditional orchard

Countryside and Rights of Way Act 2000

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF.22 PAGE 2

scale	original size	datum	grid
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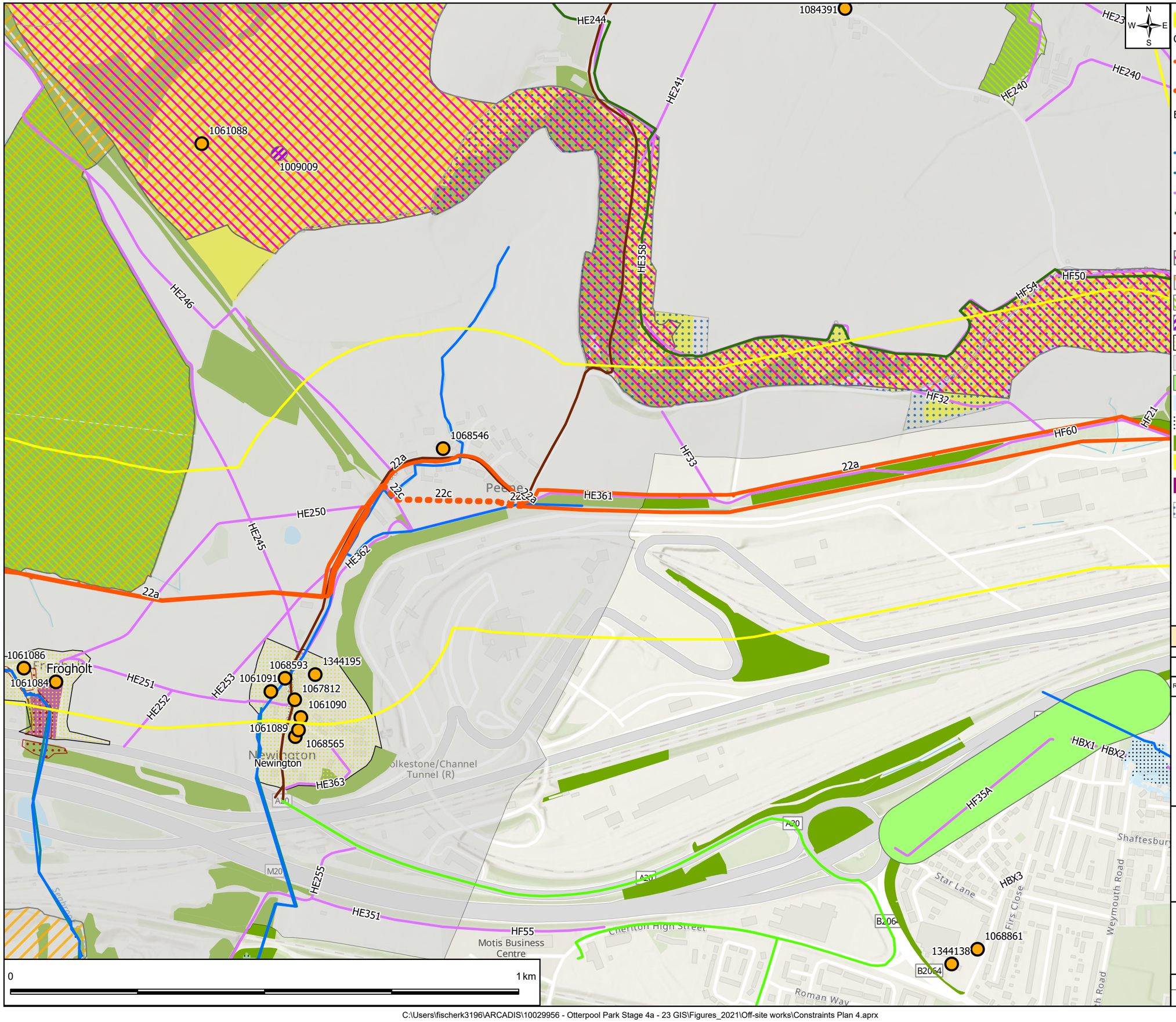

Study Area

Off-site Infrastructure

- 22a: Water main reinforcement from Paddlesworth Reservoir*
- 22c:: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Environmental Constraints

- Listed Buildings
- Main Rivers
- Watercourses
- Public Rights of Way
- National Trails
- National Cycle Network
- Special Areas of Conservation - Folkestone to Etchinghill Escarpment
- Sites of Special Scientific Interest
- Ancient Woodland
- Scheduled Monuments
- Conservation Areas
- Areas of Outstanding Natural Beauty
- Noise Important Areas
- Flood Zone 2
- Flood Zone 3
- Deciduous woodland
- Lowland calcareous grassland
- No main habitat but additional habitats present
- Countryside and Rights of Way Act 2000

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

REV	Date	Description	Drawn	Check	Approv
01	14/02/22	FOR INFORMATION	KF	EN	OC

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FIGURE 4A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF.22 PAGE 3

scale	original size	datum	grid
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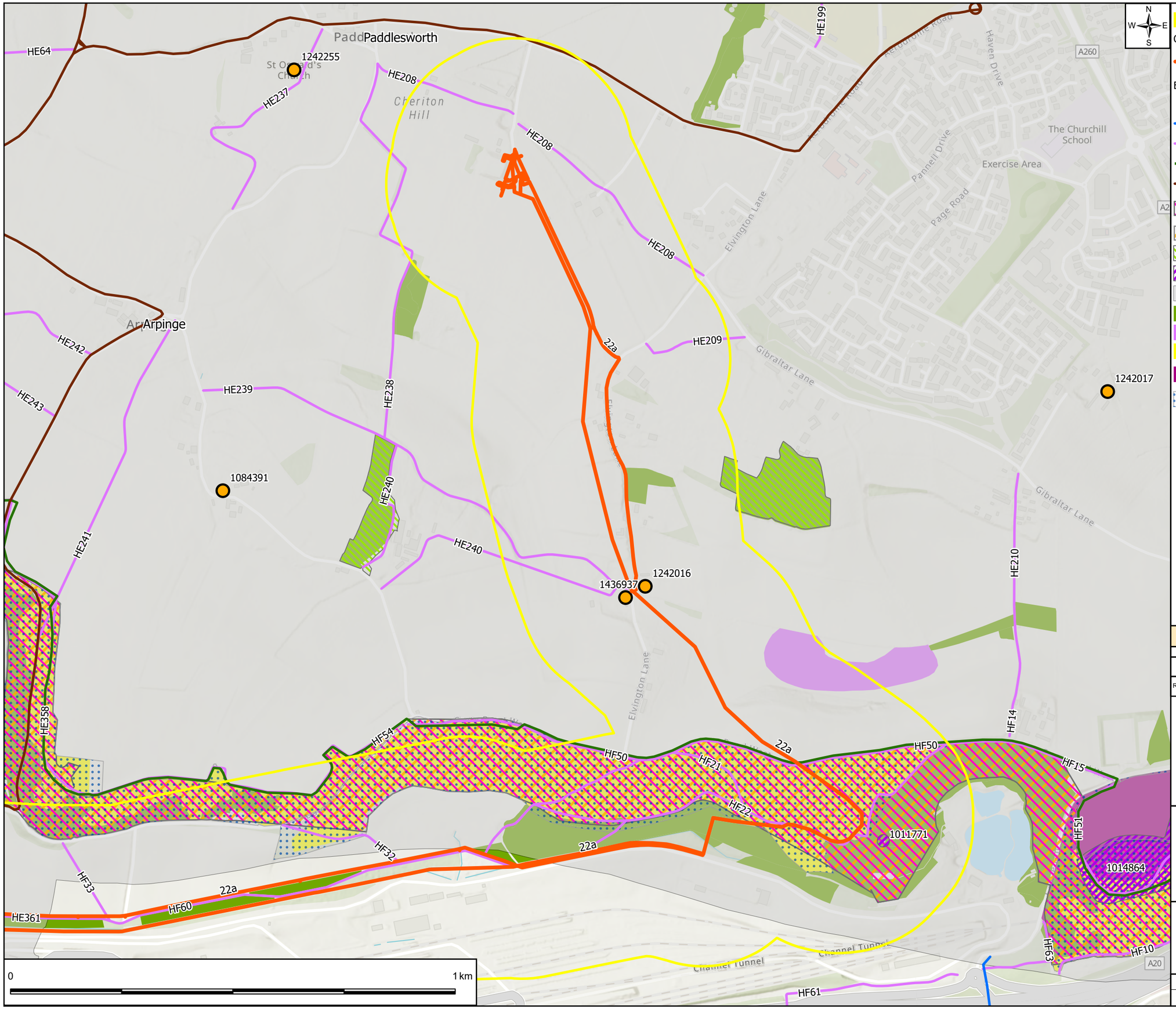

Study Area

Off-site Infrastructure

- 22a: Water main reinforcement from Paddlesworth Reservoir*

Environmental Constraints

- Listed Buildings
- Main Rivers
- Public Rights of Way
- National Trails
- National Cycle Network
- Special Areas of Conservation - Folkestone to Etchinghill Escarpment
- Sites of Special Scientific Interest
- Ancient Woodland
- Scheduled Monuments
- Areas of Outstanding Natural Beauty
- Deciduous woodland
- Good quality semi-improved grassland
- Lowland calcareous grassland
- No main habitat but additional habitats present
- Countryside and Rights of Way Act 2000

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4A: CONSTRAINTS PLANS FOR OFF-SITE WORKS REF.22 PAGE 4

scale	original size	datum	grid
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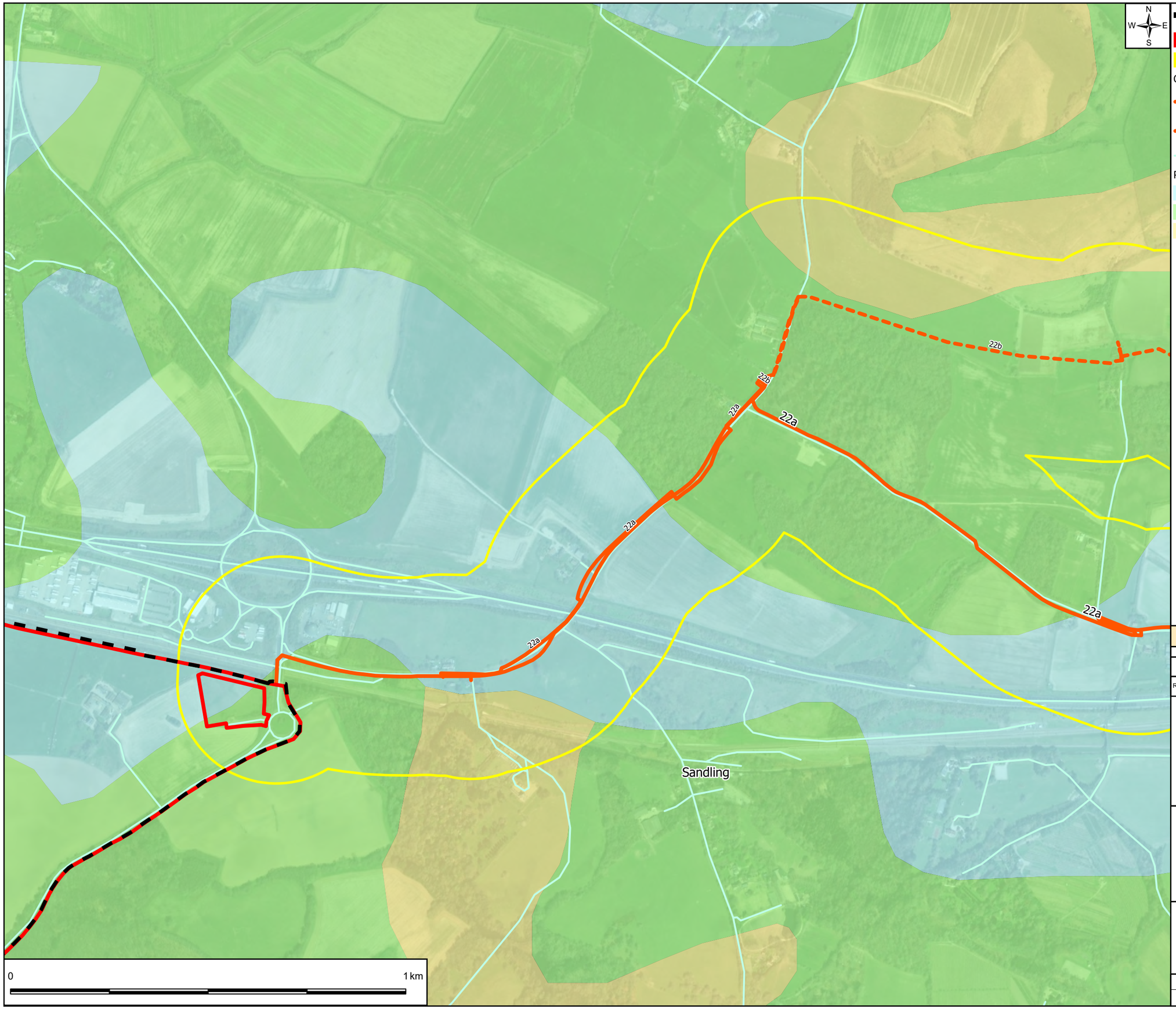

Framework Masterplan

Outline Planning Application Boundary (OPA)

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Roads

Provisional Agricultural Land Classification

Grade 2

Grade 3

Grade 4

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION PAGE 1

scale	original size	datum	grid
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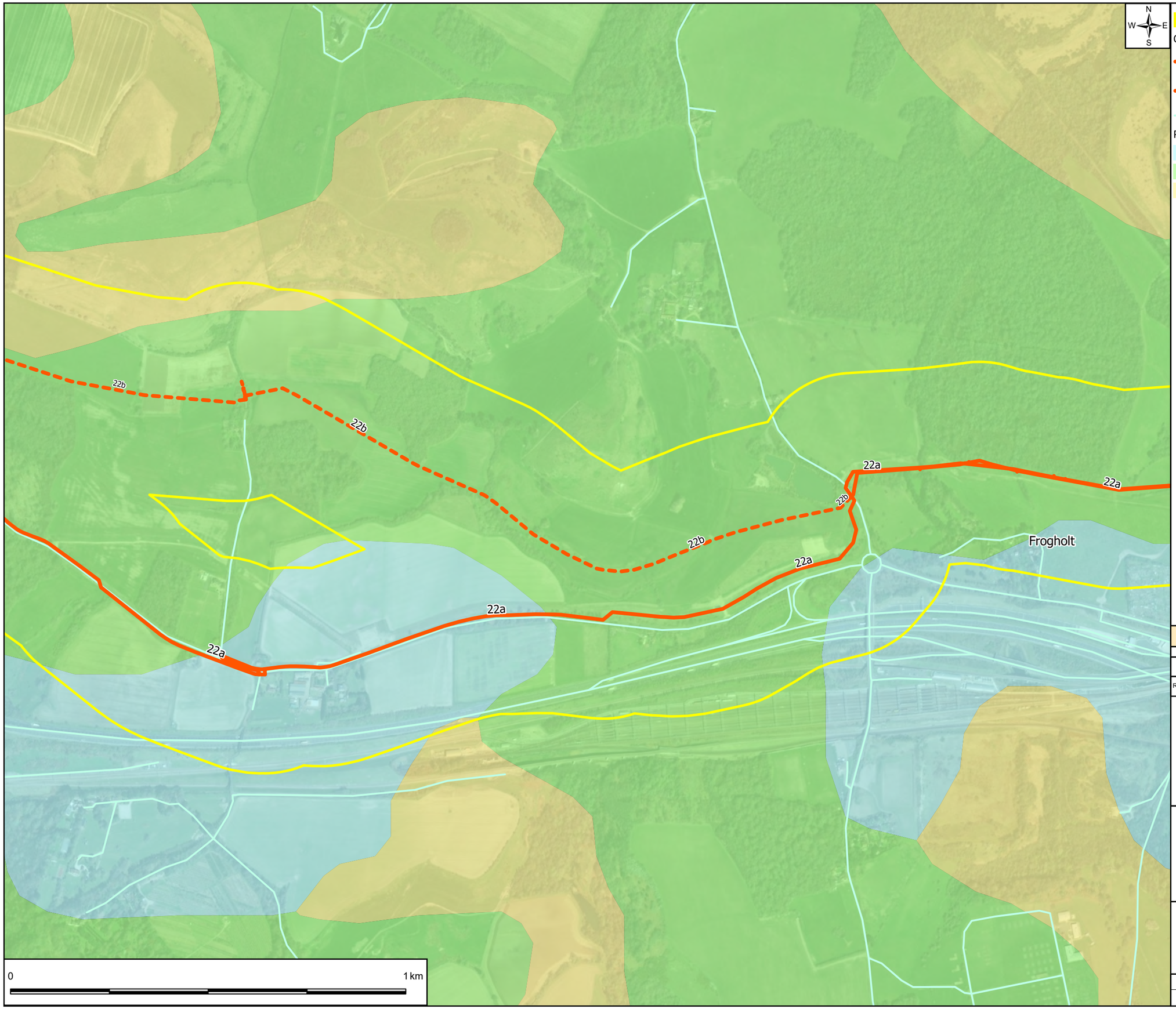

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Roads

Provisional Agricultural Land Classification

Grade 2

Grade 3

Grade 4

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION PAGE 2

scale	original size	datum	grid
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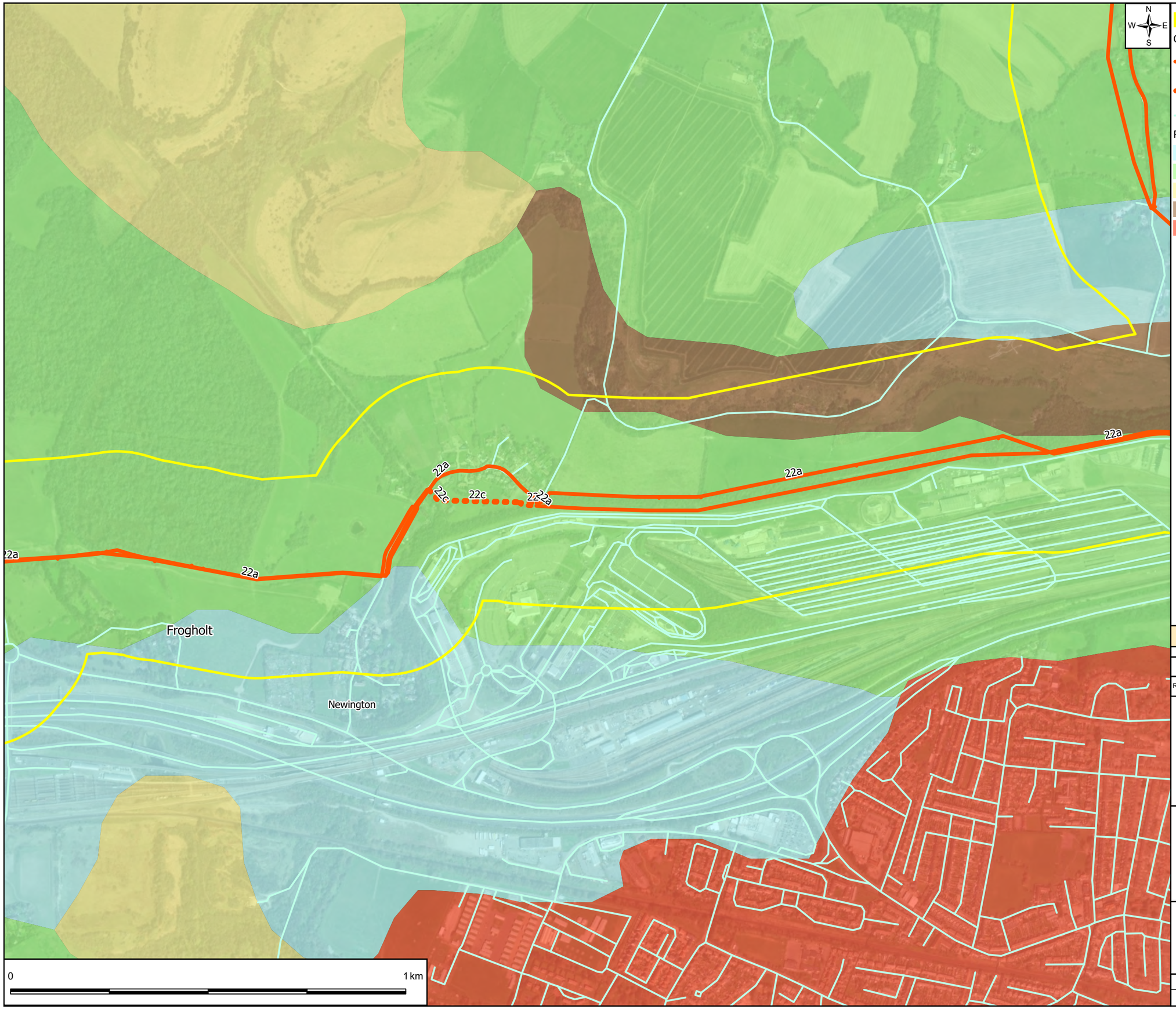

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22c:: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Roads

Provisional Agricultural Land Classification

Grade 2

Grade 3

Grade 4

Grade 5

Urban

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 4B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION PAGE 3

scale	original size	datum	grid
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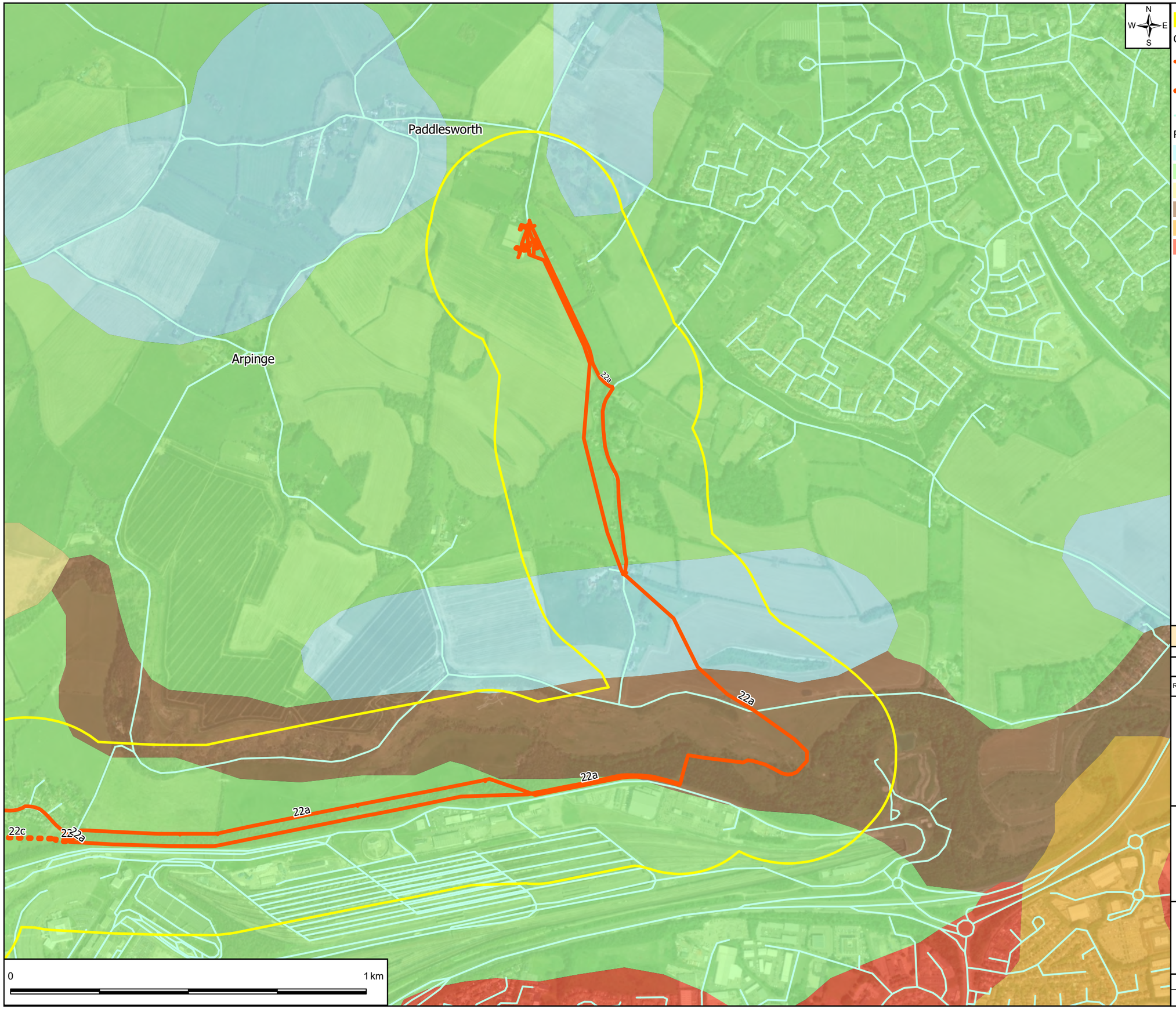

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22c:: Alternate option for water main reinforcement from Paddlesworth Reservoir*

Roads

Provisional Agricultural Land Classification

Grade 2

Grade 3

Grade 4

Grade 5

Non Agricultural

Urban

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

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FIGURE 4B - PROVISIONAL ARGICULTURAL LAND CLASSIFICATION PAGE 4

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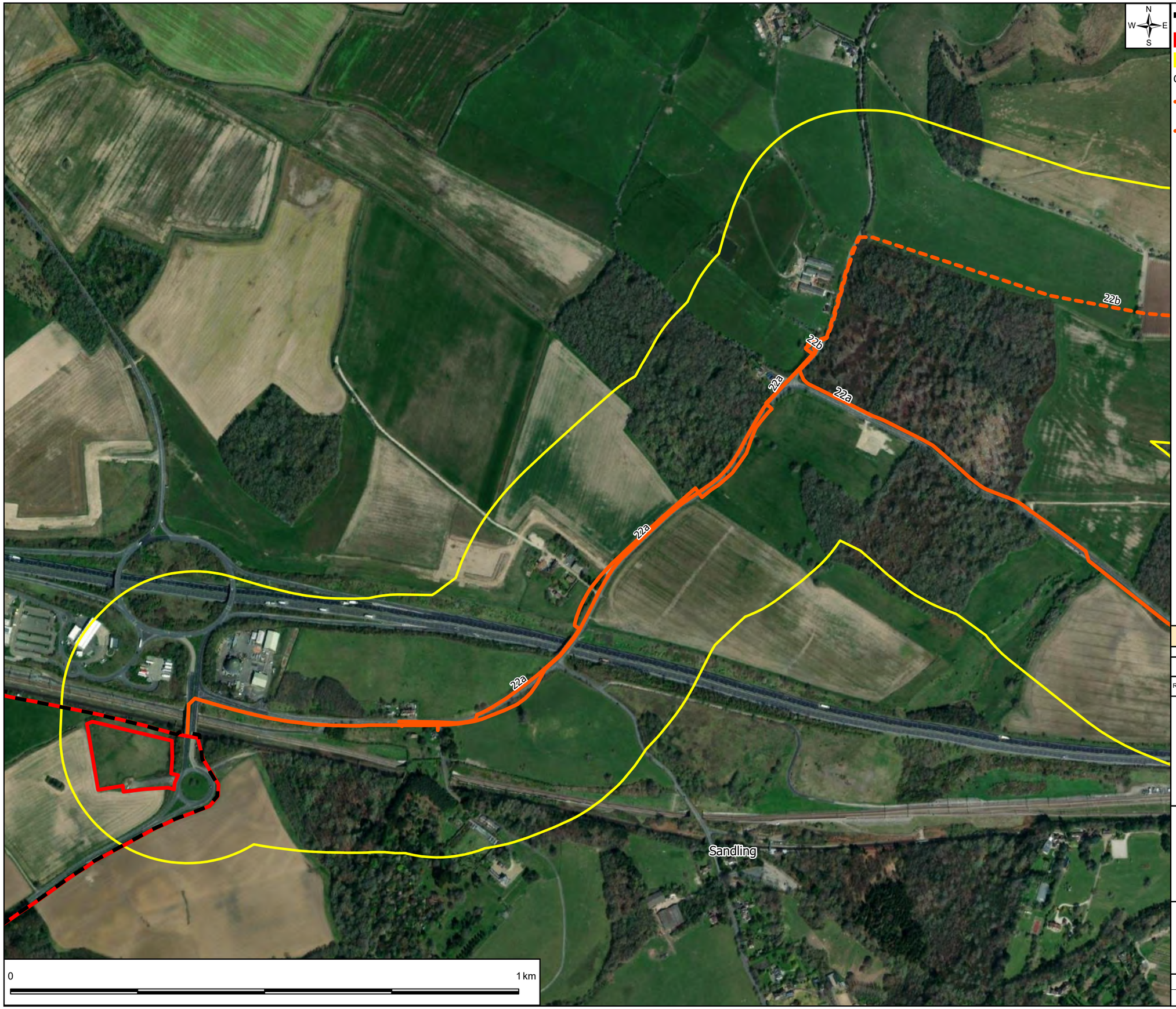

Framework Masterplan

Outline Planning Application Boundary (OPA)

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

Layer Credits: Maxar, Microsoft

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FIGURE 4C: AERIAL IMAGERY FOR OFF-SITE WORKS REF.22 PAGE 1

scale	original size	datum	grid
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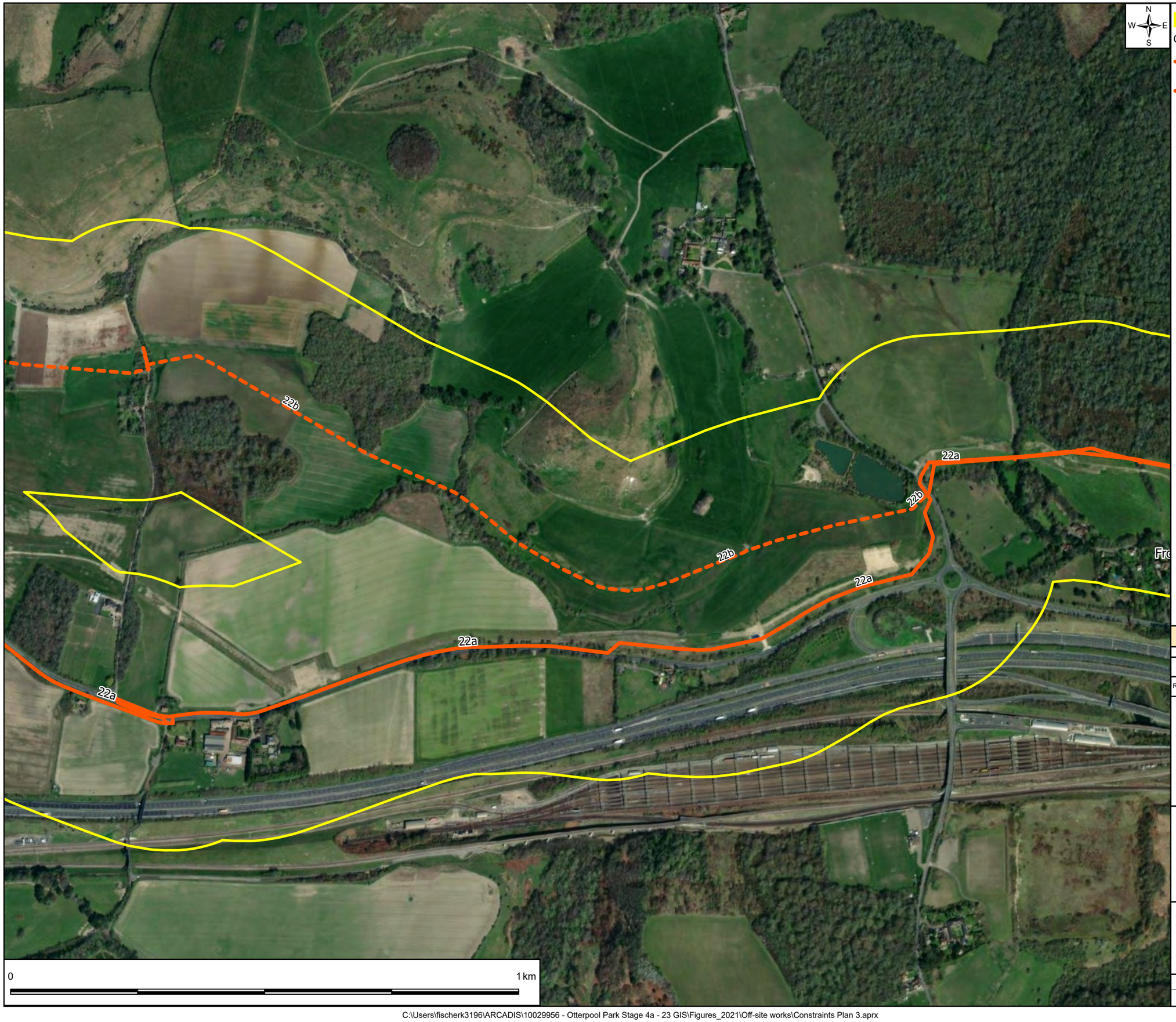

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22b: Alternate option for water main reinforcement from Paddlesworth Reservoir*

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

Layer Credits: Maxar, Microsoft

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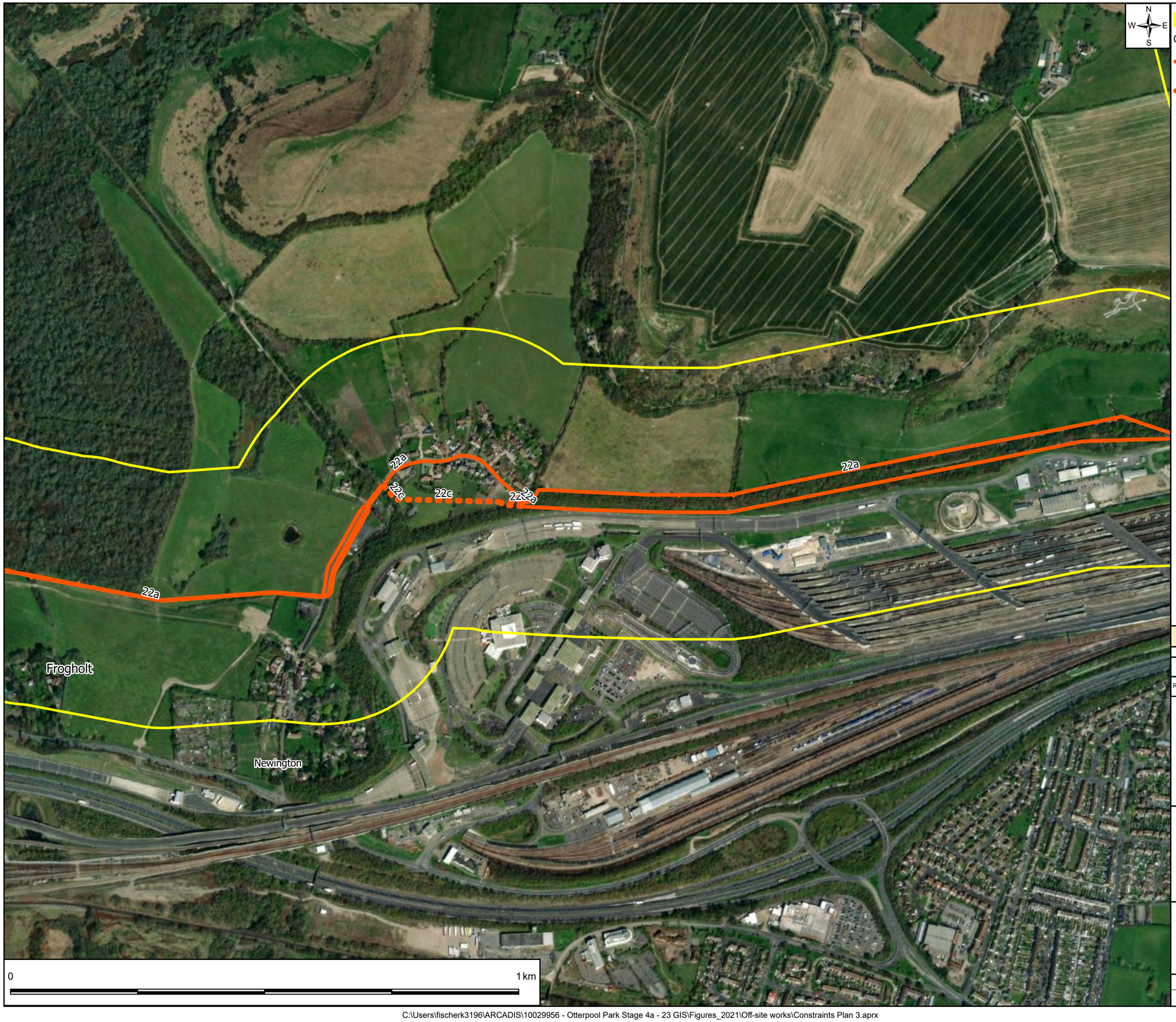
FIGURE 4C: AERIAL IMAGERY FOR OFF-SITE WORKS REF.22 PAGE 2

scale	original size	datum	grid
1:7,000	A3	Sx	OSGB

C:\Users\fischerk3196\ARCADIS\10029956 - Otterpool Park Stage 4a - 23 GIS\Figures_2021\Off-site works\Constraints Plan 3.aprx



Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

22c:: Alternate option for water main reinforcement from Paddlesworth Reservoir*

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

Layer Credits: Maxar, Microsoft

REV	Date	Description	Drawn	Check	Approv
01	14/02/22	FOR INFORMATION	KF	EN	OC

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FIGURE 4C: AERIAL IMAGERY FOR OFF-SITE WORKS REF.22 PAGE 3

scale	original size	datum	grid
1:7,000	A3	Sx	OSGB

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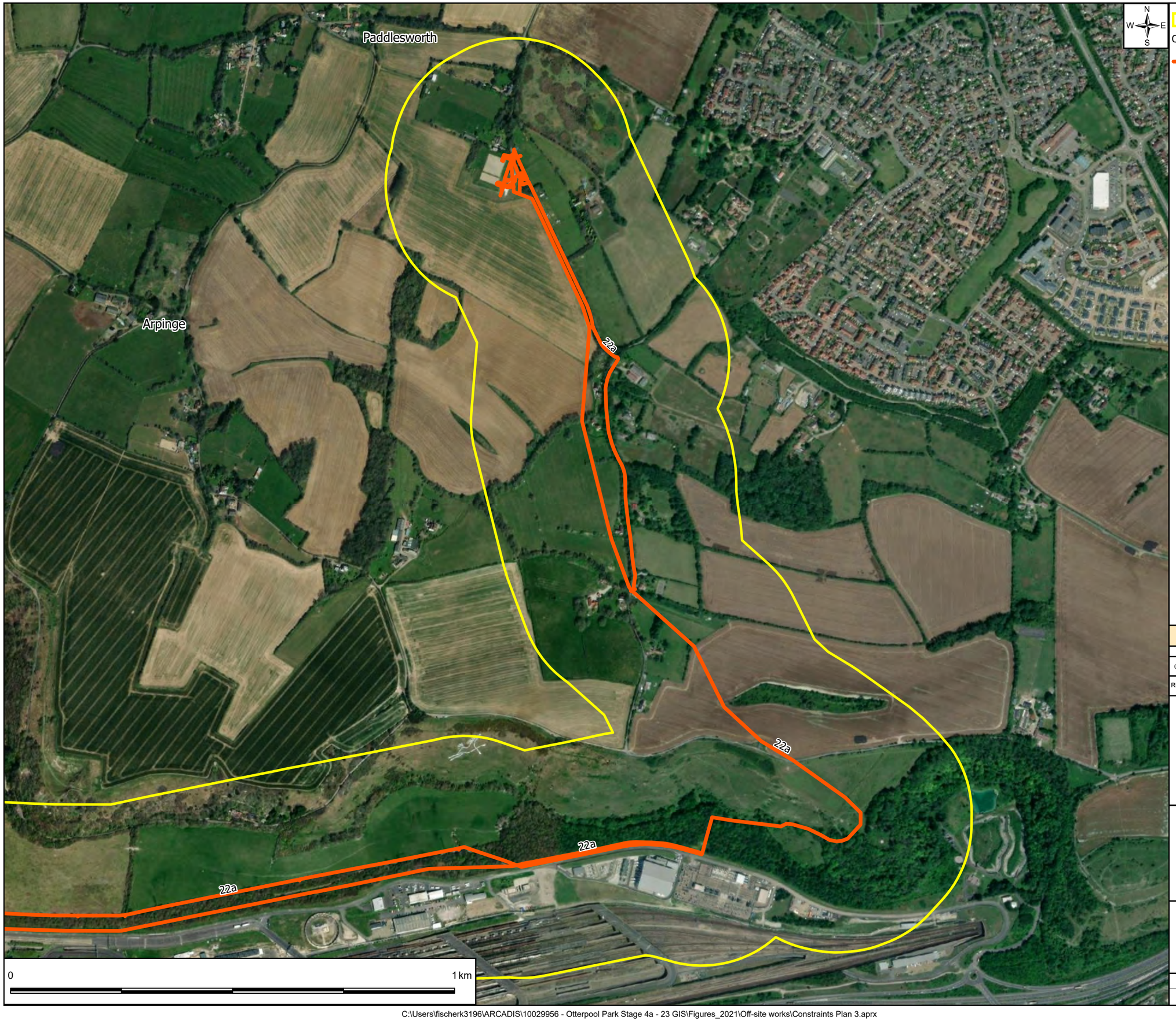

Study Area

Off-site Infrastructure

22a: Water main reinforcement from Paddlesworth Reservoir*

The majority of Folkestone and Hythe District is designated as an Archaeological Notification Area

* The original shapefile of the existing water main route was supplied by Affinity Water, and has been edited to remove offshoots from the main route post receipt

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FIGURE 4C: AERIAL IMAGERY FOR OFF-SITE WORKS REF.22 PAGE 4

scale	original size	datum	grid
1:8,000	A3	Sx	OSGB

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